# YOGA FOR ADOLESCENTS WITH AUTISM SPECTRUM DISORDERS: A CURRICULUM WITH A SENSORY APPROACH THAT INCORPORATES COPING STRATEGIES FOR STRESS AND PROMOTES PHYSICAL FITNESS

A Project

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Tara Delgado-Bridges

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A Project

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## Abstract

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## Tara Delgado-Bridges

Research findings indicate that adolescents with autism spectrum disorders (ASD) have a high prevalence rate of anxiety (72-84%) (Lytle & Todd, 2009; Groden et al., 2005; Reaven et al., 2009), sensory processing difficulties (42-82%) (Pfeiffer, Koenig, Kinneraley, Shappard & Henderson, 2011) and are at risk for obesity due to lack of physical activity (Obrusnikova & Cavalier, 2010). Interventions for adolescents with ASD focus on specific deficits, such as, cognitive, social or academic deficits and rarely take a multidisciplinary approach (Kenny, 2002). The purpose of this project was to create a yoga curriculum for adolescents with ASD to teach coping strategies to alleviate stress, address sensory processing difficulties and promote physical activity. The literature review explored the benefits of yoga for typically developing children and adolescents and the efficacy of yoga programs for children and adolescents with ASD. Findings from this research demonstrate the potential benefits of yoga for adolescents

with ASD in reducing stress (Goldberg, 2004); increasing attending skills and selfregulation skills (Behar, 2006); decreasing challenging behaviors and increasing ability to concentrate (Rosenblatt et al., 2011); increasing compliance behaviors and decreasing hyperactivity (Koenig, Buckley-Reen & Garg, 2012); and increasing imitation skills (Radhakrishna, 2010). Additional research pertaining to adolescents with ASD was explored in the areas of stress and anxiety, sensory processing difficulties and physical activity. The yoga curriculum contains nine comprehensive lessons that systematically teach adolescents with ASD breathing exercises and yoga poses for relaxation. Additionally, the concepts of feeling relaxed and anxious are define and explained. The yoga curriculum contains a variety of visual supports, including visual sentence strips to support adolescents with ASD to utilize breathing exercises and yoga poses. The curriculum also incorporates a variety of sensory activities and promotes independent yoga practice at home to increase physical activity.

\_\_\_\_\_, Committee Chair Jean Gonsier-Gerdin, Ph.D.

Date

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## Chapter 1

## INTRODUCTION

#### **Background of the Problem**

Autism spectrum disorders (ASD) are a range of neurodevelopmental disorders that include autistic disorder, asperger syndrome, and pervasive developmental disorder not otherwise specified (PDD-NOS) (National Institute of Mental Health, 2012). Characteristics of ASD include difficulty relating to people, things and events, communication problems, or repetitive body movements or behaviors. Difficulties relating to people may include inability to make friends or interact with others (American Psychiatric Association, 2012). Communication difficulties can be comprised of individuals being nonverbal, having limited verbal skills or deficits in social communication, such as, understanding nonverbal cues, and inability to engage in conversation or make eye contact. Behavioral problems associated with individuals with ASD may consist of tantrums, short attention span, aggression, narrowed interests, or inability to cope with change. (PubMed Health, 2012). Additionally, individuals with ASD can have difficulties processing sensory information which can affect participation in functional daily life and activities (Miller, Nielsen, Schoen & Brett-Green, 2009). Sensory processing difficulties may include poor body awareness, stiff uncoordinated movements, difficulty sitting still, low muscle tone or sensitivities to being touched or loud noises (Cuomo, 2007).

It is estimated that the prevalence rate of ASD increased by 78% from 2002 to 2008 (Baio, 2012). The rise in the number of youth with ASD and the dynamic needs of

this condition justifies the necessity to explore interventions designed for adolescents with ASD to improve quality of life (Garcia-Villamisar & Dattilo, 2010). Studies demonstrate that the majority of adolescents with ASD (72-84%) are affected with an anxiety disorder (Lytle & Todd, 2009; Groden et al., 2005; Reaven et al., 2009). Adolescents can have an increase in anxiety due to awareness of their social disability (White, Oswald, Ollendick & Scahill, 2010). Therefore, one potential area for intervention is anxiety and stress management. Yet, the majority of current interventions focus on improving specific deficits, such as, cognitive, social, or academic deficits and give little or no attention to the management of stress and anxiety (Simpson et al., 2005). Clearly, there is a need for more effective approaches to help adolescents with ASD deal with anxiety related issues.

Another concern for individuals with ASD is sensory processing difficulties which can affect 42%-82% of children with ASD (Pfeiffer, Koenig, Kinnealey, Shappard & Henderson, 2001). There have not been many studies focusing on how adolescents with ASD are affected by sensory processing difficulties. However, a recent study of adolescents with ASD demonstrated participants had atypical responses to sensory stimuli (De la Marche, Steyaert & Noens, 2012). Based on evidence that children with ASD are highly affected by sensory processing difficulties and preliminary evidence regarding sensory processing difficulties in adolescents with ASD, conclusions can be made that adolescents with ASD are in need of interventions to address sensory processing difficulties. In addition, obesity is a health problem for adolescents with ASD (Obrusnikova & Cavalier, 2010). The 2005 Youth at Risk Behavior Survey found that adolescents with disabilities have a significantly higher rate of being overweight compared to typically developing teens. Adolescents with disabilities have a range of cognitive, developmental, and/or physical limitations which can impact their ability to be as physically active as compared to other adolescents, therefore contributing to higher obesity rates (Keeton & Kennedy, 2009). Programs that focus on strengths rather than weaknesses and have an "ability first" approach can be more successful in creating life-long desire for adolescents with ASD to remain physically active (Borremans, Rintala & McCubbin, 2010).

Emerging interest in yoga, a mind-body intervention, for individuals with ASD is proving to be beneficial in a variety of areas, including management of stress and anxiety, (Koenig, Buckley-Reen & Garg, 2012; Rosenblastt et al., 2011; Goldberg, 2004), sensory processing difficulties, and potentially increasing physical activity. Scott Anderson is a yoga teacher in Madison Wisconsin who in 2008 created Spectrum Yoga Therapy, a nonprofit organization providing one-on-one and low cost yoga for people with ASD. Anderson has observed yoga to help people with ASD improve self-regulation. On his website, he claims that his yoga program has numerous benefits for people with ASD. These benefits include reduction of pain, aggression, obsessive and self-stimulatory behaviors and anxiety, more control in regulating anxiety and emotions, and the joy of taking a class and making new friends. Additionally, Spectrum Yoga Therapy is partnering with the Center for Investigating Healthy Minds to research the effects of this program for individuals with autism (Spectrum Yoga Therapy, 2012). Another yoga instructor and occupational therapist, Nicole Cuomo, published a book with strategies to teach yoga to children with sensory processing difficulties. She has discovered yoga to be a potential option to alleviate some symptoms associated with sensory processing difficulties. In particular, she has found that yoga may improve one's stability, body awareness, or motor planning, which can be deficits for individuals with sensory processing difficulties (Cuomo, 2007).

Additional benefits of using yoga for adolescents with ASD to alleviate stress and address sensory processing difficulties could be the health benefits associated with yoga, such as improvements in respiratory and cardiovascular function (Woodyard, 2011). Yoga is highly individualized and promotes going at your own pace, which can create a non-threating environment for adolescents with ASD. It is highly accessible because it is low cost and can be done anywhere. These components of yoga make it a potentially suitable intervention for adolescents with ASD in terms of helping manage stress and anxiety, addressing sensory processing difficulties, and increasing physical activity.

#### **Statement of the Problem**

As mentioned earlier, interventions for adolescents with ASD focus on specific deficits and rarely take a multidisciplinary approach in incorporating a variety of needs (Kenny, 2002). Additionally, adolescents with ASD are at risk for anxiety disorders, sensory processing difficulties, and obesity; however limited interventions available target these issues specifically (Simpson et al., 2004). There is minimal research regarding various coping strategies for stress to be used by individuals with ASD. In a literature review of stress in relation to ASD, only 14% of articles focused on challenges

of stress and coping strategies for individuals with ASD. Instead, the majority of articles included coping strategies for family members of the individual diagnosed with ASD (Baron, Groden, Groden & Lipsitt, 2006).

A common intervention used to combat anxiety for individuals with ASD are medications (Reaven et al., 2009). However, this can be problematic due to safety concerns regarding possible side effects. Parents are seeking out complementary and alternative medicines (CAM) for their children with ASD (Hanson, et al., 2006). Surveys have estimated that over half of children with ASD use CAM therapies (Golink & Ireland, 2009). In a study of the current trends of parents who use CAM therapies, it concluded that 30% of parents utilized mind body interventions. The 2007 National Health Interview Survey states that yoga, a mind body intervention, is one of the top 10 methods used as CAM (National Center for Complementary and Alternative Medicine, 2012). The growing trend of CAM therapies used by children with ASD and yoga being a top CAM therapy used for children warrants the exploration of yoga for adolescents with ASD.

Schools across the United States are actually using yoga in classrooms as a behavior management technique, including the management of stress for typically developing children (Koenig, Buckley-Reen & Garg, 2012). However, Yoga Ed. a popular yoga curriculum for grades K-12 does not include adaptations for children or adolescents with ASD (E. Vittoria, personal communication, October 12, 2012). The limited yoga books that are available that include adaptations for individuals with ASD only target young children with ASD (Betts & Betts, 2006; Cuomo, 2007; Williams, 2010). In researching yoga for adolescents with ASD, there are no curriculums or books found that specifically target this population. Additionally, not many yoga studios offer classes for adolescents with ASD. For example, the current author researched yoga classes for adolescents with ASD in the Sacramento region and found that this type of resource is not available in this area. Yoga classes for adolescents with ASD are provided in other cities, such as, Norwood, MA, Manchester, NJ and Madison, WI, but are isolated and sporadic (Peaceful Pathways, 2012; Spectrum Yoga Therapy, 2012; Yogabilities, 2012). A yoga curriculum available online would make yoga more accessible for adolescents with ASD considering there are no curriculums, books, or limited yoga studios providing classes for adolescents with ASD.

#### **Purpose of the Project**

The purpose of project is to develop a yoga curriculum for adolescents with ASD grades 7-12. The yoga curriculum will: (a) review yoga postures and breathing techniques for relaxation; (b) identify the benefits of breathing exercises and yoga poses; (c) define and explain the concepts of being relaxed and anxious; and (d) systematically teach adolescents with ASD how to utilize breathing exercises and yoga poses as a coping strategy to stress. The curriculum will incorporate sensory concepts and advocate for independent yoga practice at home to promote physical activity. A yoga routine and guided imagery activity are both included in this curriculum. It will be available online at a website called OMazing Kids that gathers resources, research and information regarding yoga for children and adolescents with specials needs and includes adolescents

with ASD. Lastly, the curriculum is designed to be easy to follow and use for instructors without prior experience or knowledge of yoga.

## **Significance of the Project**

Interventions for adolescents with ASD typically target one specific deficit. For example, a common intervention like applied behavior analysis (ABA) focuses on behavior management through prevention and proactive strategies. (Baron, Groden, Groden & Lipsitt, 2006). Yoga is a viable supplemental activity that can complement and integrate aspects of interventions commonly used with individuals with ASD. Yoga poses that are weight bearing can provide proprioceptive input that may help some individuals with ASD who have sensory processing difficulties (Cuomo, 2007). Relaxation poses may help calm and reduce stress for individuals with behavioral problems that may be a result of anxiety (Groden et al., 2005). Consistent yoga practice has been linked to healthy weight maintenance (Ross, Friedmann, Bevans & Tomas, 2012). Therefore, the yoga has the potential to promote physical activity for adolescents with ASD. The yoga curriculum developed for this project will take a multi-disciplinary approach and focus on strategies to reduce stress, incorporate sensory activities, and promote physical activity.

Specific teaching strategies that facilitate meaningful learning opportunities for adolescents with ASD should be considered when teaching yoga. However, to the current author's knowledge, there are no resources that systematically aid in the development of teaching or adapting a yoga practice for adolescents with ASD. Moreover, this yoga curriculum will empower adolescents with ASD by teaching them the relaxation benefits and coping strategies using breathing exercises and yoga poses. Finally, this yoga curriculum will be available to access online, making it highly accessible.

## **Limitations of the Project**

One limitation of this project is that it was developed on the limited research available on the benefits of yoga for adolescents with ASD. There is very little valid research in the field of yoga for adolescents due to unsupported sample sizes, inconsistent intervention descriptions, varying outcome measures and low power in the studies available (White, 2009). Additionally, there is research currently in the process on the benefits of yoga for children with ASD that will not be available during the time frame of this project. Nonetheless, studies that are currently in process will be provided for future references. Another limitation of this project is the availability of yoga program information currently utilized for adolescents with ASD. The curriculum is based on currently available information of specific yoga poses, breathing techniques, or related yoga based activities and adapted from resources the author was able to obtain. This project was developed through online resources, adapting yoga books targeted for typically developing children/teens or younger children with ASD, conversations with yoga instructors, and research articles. A third limitation is the author is not a certified yoga instructor. The author has been personally practicing yoga for 10 years and working with children and adolescents with ASD for 8 years as a teacher and behavior therapist. Lastly, this program was not piloted; therefore, the effectiveness of the program for adolescents with ASD is yet to be determined.

## **Definition of Terms**

## Asana

Asana refers to yoga poses that focus on the connection of movement and breathing (Ehleringer, 2010)

## Asperger Syndrome

Individuals with this syndrome usually have milder symptoms of autistic disorder. They might have social challenges and unusual behaviors or interests. They typically do not have problems with language or have an intellectual disability (Center for Disease Control and Prevention, 2012).

## Autism Spectrum Disorders

Autism spectrum disorders (ASD) are a range of neurodevelopmental disorders that include autistic disorder, Asperger syndrome, and pervasive developmental disorder not otherwise specified (PDD-NOS) (Center for Disease Control and Prevention, 2012). Characteristics of ASD include communication problems, difficulty relating to people, things and events or repetitive body movements or behaviors (American Psychiatric Association, 2012).

## Autistic Disorder

Individuals with this disorder usually have significant language delays, social and communication challenges, and unusual behaviors and interests. Individuals with the diagnosis may also have an intellectual disability (Center for Disease Control and Prevention, 2012).

## Complementary and Alternative Medicine (CAM)

The National Center for Complementary and Alternative Medicine defines CAM, "as a group of diverse medical and health care systems, practices, and products that are not generally considered part of conventional medicine" (National Center for Complementary and Alternative Medicine, 2012).

## Guided Imagery

A person is guided by a practitioner through storytelling or descriptions which are designed to suggest mental images to replace negative or stressful feelings and promote relaxation. (National Center for Complementary and Alternative Medicine, 2012) *Hatha Yoga* 

Hatha yoga is the relationship between postures (asanas) and mindful breathing (pranayama) (White, 2009).

## Mind-Body Practices

Mind-body practices focus on the interactions among the brain, mind, body and behavior, with the intent to use the mind to affect physical functioning and promote health (National Center for Complementary and Alternative Medicine, 2012).

## Meditation

Meditation is a mind-body CAM therapy in which a person learns to focus attention and become mindful of thoughts, feelings, and sensations and to observe in a nonjudgmental way. It is believed to result in a greater state of calmness and physical relaxation, and psychological balance (National Center for Complementary and Alternative Medicine, 2012).

## *Pervasive Developmental Disorder Not Otherwise Specified (PDD-NOS)*

Individuals with this disorder have milder symptoms than those with autistic disorder. They might only have impairments with reciprocal social interaction in conjunction with verbal or nonverbal communication deficits, or accompanied with stereotyped behavior, interest and activities (Center for Disease Control and Prevention, 2012).

## Pranayama

This term refers to breath control or controlled breathing (Cuomo, 2007). Proprioceptive System

A system in the body located in the muscles and joints that gives information regarding body position and resistance (Cuomo, 2007).

## *Relaxation Techniques*

A variety of practices to consciously produce the body's natural relaxation response, characterized by slower breathing, lower blood pressure, and feeling of calm and well-being. These practices can be used to release tension, reduce stress and pain, promote sleep, and calm emotions. Examples of these practices are progressive relaxation, guided imagery, biofeedback, self-hypnosis, and deep breathing exercises (National Center for Complementary and Alternative Medicine, 2012).

#### Self-Regulation

The process of setting goals, developing action plans to achieve those goals, implementing and following the action plans, evaluating the outcomes of the action plan, and changing action plans if the goal is not achieved (Wehmeyer, Shogren, Smith, Zager, & Simpson, 2010).

## Self-Stimulatory Behavior

Self-stimulatory behaviors are behaviors that can interfere with positive social behavior or learning and integration into community settings. This can include body rocking, spinning, hand-flapping, head-nodding, object tapping, gazing at lights and mouthing (Rosenthal-Malek & Mitchell, 1997).

## Sensory Processing Difficulties

A sensory processing difficulty impairs responses to, processing of, and/or organization of sensory information that effects participation in functional daily life routines and activities (Miller, Nielsen, Schoen, & Brett-Green, 2009). Difficulties processing sensory stimuli may be not responding to the environment, oversensitivity to the environment, or seeking out more sensory input (Simpson et al., 2004)

## Tactile System

A system located in the body's skin and gives us information regarding texture, temperature, shape and size (Cuomo, 2007).

## Vestibular System

A system located in the inner ear and gives us information on where we are in relation to gravity (Cuomo, 2007).

## **Organization of the Remainder of the Project**

The remainder of the project is organized as follows. Chapter Two reviews relevant literature pertaining to ASD and yoga. This review explores the benefits of yoga, the benefits of yoga for typically developing children and adolescents and the benefits of yoga for children and adolescents with ASD. Current yoga programs for children and adolescents with ASD are identified. Lastly, an examination of stress and anxiety, sensory processing difficulties and physical activity in relation to adolescents with ASD is discussed, including interventions utilized to target these issues. Chapter Three describes the methods used to create the yoga curriculum for adolescents with ASD. Chapter Four offers a detailed description of the components of the yoga curriculum and the potential benefits of each component for adolescents with ASD. Conclusions and recommendations for further practice and research pertaining to yoga and adolescents also are provided. A copy of the yoga curriculum is in the appendix.

## Chapter 2

## **REVIEW OF LITERATURE**

Despite the limited availability of empirical research on yoga for individuals with ASD, clinical reports of the positive impact of yoga for individuals with ASD have stimulated interest in this field (Ehleringer, 2010). The few available studies completed on individuals with ASD focus mainly on younger children. However, given the benefits found in studies for adults, teens and children without ASD, conclusions may be drawn regarding possible benefits for adolescents with ASD. This literature review will examine the research in following areas related to yoga and adolescents with ASD: (a) defining yoga and the associated benefits; (b) the efficacy of specific yoga for typically developing children and adolescents; and (c) yoga programs with children and adolescents with ASD. As mentioned in Chapter One, due to the high prevalence rate of stress and anxiety, sensory processing difficulties and obesity in adolescents with ASD, the current author found it noteworthy to review literature pertaining to these challenges and interventions that address these issues to inform her project.

#### **Yoga and Associated Health Benefits**

Yoga is a mind body practice that combines physical postures, breathing techniques, and meditation or relaxation techniques (National Center for Complementary and Alternative Medicine, 2012). The mind-body connection of yoga involves a combination of muscular activity and an internally directed mindful focus on awareness of the self, the breath, and energy (Woodyard, 2011). Mind-body practices focus on interactions among the brain, mind, body and behavior, with the intent to use the mind to affect physical functioning and promote health (The National Center for Complementary and Alternative Medicine, 2012).

There are numerous styles of yoga. Hatha yoga is the most common style used in the United States. Hatha yoga is the relationship between postures (asanas) and mindful breathing (pranayama) (White, 2009). Hatha yoga practice uses concentrated breath work through a variety of standing, seated and balancing postures followed by forms of twists and backbends or inversions, ending with relaxation or meditation postures. The different types of mindful breathing exercises may stimulate/create energy or be calming/create balance (Forfylow, 2011). The various postures in yoga are designed to exercise a specific part of the body and can be weight bearing, stabilizing, or mobilizing. Postures can benefit the mind by stimulating psychological and emotional responses. For example, forward bends have a calming/soothing effect, back bends /inversions are energizing, and balancing poses can improve concentration (Forfylow, 2011).

Yoga is considered a holistic approach to health which has led to therapeutic yoga programs being developed. The International Association of Yoga Therapists (IAYT) was formed to recognize yoga as a therapy. IAYT is a professional organization that supports education and research on yoga. They define yoga therapy as, "the process of empowering individuals to progress toward improved health and well-being through the application of the philosophy and practice of yoga" (The International Association of Yoga Therapists, 2012). Yoga's comprehensive approach with combining elements of the mind and body is rapidly gaining attention as an effective wellness exercise for many people (Ross & Thomas, 2010).

The benefits of yoga are more commonly researched in the adult population. Research has proven yoga to be an effective method of managing stress, anxiety and depression and many studies have demonstrate the efficacy of yoga on mood related disorders (Woodyard, 2011). Additionally, yoga improves strength, flexibility, respiratory and cardiovascular function. Yoga can also enhance treatments for addiction and chronic pain, as well as improve sleep patterns (Woodyard, 2011).

## Efficacy of Yoga for Typically Developing Children and Adolescents

Kaley-Isley, Peterson, Fischer, & Peterson (2010) completed a review of literature regarding the benefits of yoga for typically developing children and adolescents. They examined studies that utilized yoga in a developmental, preventative, or therapeutic way for psychiatric or medical disorders, such as, asthma, irritable bowel syndrome, and diabetes. Participants were found to have increases in their attending skills and reductions in anxiety and depression. For participants with medical disorders, like eating disorders, asthma and irritable bowel syndrome, results demonstrated improvements with these medical issues. The various studies were found to be low in quality, but encouraging for future research. The authors concluded that the use of yoga to treat anxiety may be appealing to those wanting to avoid medications or who reject psychological diagnoses or treatments. Implications of positive aspects of yoga for typically developing children and adolescents included accessibility, low cost, nonjudgmental attitude and the noncompetitive nature. The authors were able to conclude that while there is an increase in typically developing children and adolescents practicing yoga, the scientific research

of yoga with this population is not gaining similar momentum (Kaley-Isely, Peterson, Fischer & Peterson, 2010).

Birdee et al. (2009) conducted a systematic review of 34 controlled studies of yoga for the pediatric population (5-21 years of age) with research spanning from 1979-2008. The majority of this research concluded many positive outcomes from yoga, suggesting benefits for typically developing children and adolescents. The benefits of yoga discovered in this systematic review were improvements in physical health, mental health, behavior, and development. The associated physical health benefits found were that yoga may lower blood pressure, heart rate, and respiratory rate. Improvements in motor skills and strength (i.e. balance, fine motor skills, and hand grip strength) also were concluded from various studies reviewed. Mental health improvements suggest benefits in reducing stress, depression, tension, anger and fatigue. Behavioral improvements suggest a potential benefit for children with attention-deficit hyperactivity disorder (ADHD) with a decrease of symptoms associated with ADHD. Additional behavioral improvements were increases in concentration skills and on-task time. In India, numerous studies have been conducted on how yoga can improve visual and cognitive skills. Improvements in development were discovered in verbal and spatial memory, visual perception and executive function. Limitations in most of these 34 studies proved their results to be preliminary due to low quantity and quality of trials in the studies (Birdee et al., 2009).

Galantino, Gallbavy & Quinn (2008) reviewed 24 studies on yoga for typically developing children and adolescents and promoted the use of yoga because of the

potential of diverse applications. This review of yoga studies consisted of different criteria and types of studies from the Birdee et al. (2009) review; although some studies examined were similar. Galantino et al. (2008) found yoga to be an effective intervention in fitness, physical functioning and behavior in children and adolescents. Furthermore, the authors concluded from their review of literature that children and adolescents with disabilities may benefit from yoga with the possibility of improvements in mental ability, as well as motor, coordination and social skills. Additionally, the authors found yoga to be promising due to the multidimensional approach that may simultaneously treat stress, anxiety, hyperactivity and physical impairments. Yet, the authors further concluded that more high quality studies with identification of the specific components utilized in the yoga programs were necessary to understand the impact of yoga on typically developing children and adolescents (Galantino, et al., 2008)

These three literature reviews with focus on yoga for typically developing children and adolescents suggest potential benefits for adolescents with ASD. The most common benefit of a yoga practice for typically developing children and adolescents was reduction of stress and anxiety which also can be problematic for adolescents with ASD (Birdee et al., 2009; Galantino, Gallbavy & Quinn, 2008; Kaley-Isely, Peterson, Fischer & Peterson, 2010). Concentration, attending skills and motor skills were other areas of improvement found in the literature reviews which can be deficit areas for adolescents with ASD (Birdee et al., 2009 & Kaley-Isely, Peterson, Fischer & Peterson, 2010). These benefits of yoga for typically developing children and adolescents could provide framework for the potential benefits for adolescents with ASD.

## Yoga Programs for Children and Adolescents with ASD

Yoga programs studying the benefits for children and adolescents with ASD are limited. Researching journal articles and online resources, the current author was able to locate five studies. The following section provides details from these studies with regard to the participants, components of yoga programs and results. The studies reviewed are Get Ready to Learn, Relaxation Response Program, Integrated Approach to Yoga Therapy, a pilot study in New Jersey, and Creative Relaxation.

#### Get Ready to Learn

Get Ready to Learn (GRTL) is a yoga program developed by Anne Buckley-Reen who is an occupational therapist. GRTL is a yoga curriculum that uses breathing exercises, yoga postures, chanting and relaxation techniques for elementary students with ASD or challenging behaviors. The sequence and techniques of the program are provided on a DVD for students and teachers to follow together as a group. The routines can be done daily and last approximately 15-20 minutes. Postures are repeated twice for students who have difficulty following or who need modeling. A recent study of GRTL had 24 participants, ages 5-12 years, who were diagnosed with ASD, complete the program daily for 16 weeks. The Aberrant Behavior Checklist was used to measure behaviors. The participants demonstrated significant reductions in irritability, lethargy, social withdrawal, hyperactivity and noncompliance behaviors following the completion of the yoga program (Koenig, Buckley-Reen & Garg, 2012).

## **Relaxation Response Program**

A pilot study of a movement based, modified Relaxation Response (RR) program that combined elements of yoga and dance was conducted with 24 children, ages 3-16 years, who were diagnosed with ASD. The program consisted of eight sessions that were 45 minutes in length led by a licensed clinician with certification in yoga and dance therapy. The sessions were conducted in the same format each time and consisted of breathing techniques of RR, yoga postures, music and dance, and typical yoga relaxation. Props used to facilitate learning were pictures, bubbles and pinwheels. The BASC-2 scale and Aberrant Behavioral Checklist were used to measure the following behaviors: aggression, anxiety, attention problems, atypicality, conduct problems, depression, hyperactivity, somatization, and withdrawal. The results from the pilot study demonstrated positive changes in all the behaviors measured with the largest decrease in the atypicality scale, which consisted of the following behaviors: peculiar, odd, asocial, and inappropriate behaviors and unusual visual perceptions. Overall, the participants with the most positive impact were children, ages 5-12. Furthermore, this study concluded that future research on the role of sensory activities incorporated in the program would be beneficial in discovering how these activities specifically affected outcomes of the study (Rosenblatt et. al, 2011).

## **Integrated Approach to Yoga Therapy**

A pilot study in India studied the impact of a program called the Integrated Approach to Yoga Therapy (IYAT) on six children, ages 8-14 years, with ASD and their parents. The children in the study were grouped by age, sex, IQ, and the socioeconomic/ educational background of parents. The study involved a 10 month program with 5 weekly sessions that lasted 45 minutes. The sessions consisted of postures and breathing exercises. The postures were categorized as follows: warm-up poses, release of tension poses, calming poses, and breathing poses. The program was assessed using questionnaires completed by parents, special educators, and observers' comments and reviews. The results from the pilot study suggest that IYAT can increase imitation skills. Moreover, the participants in the study showed improvements with gross motor actions, vocalization, complex imitation, oral facial movements, and imitating breathing exercises. There were also positive changes found in non-verbal communication (i.e. eye contact and joint attention), self-esteem, emotional bonding, focus, tolerance to touch, proximity and sharing of attention (Radhakrishna, 2010).

#### **Pilot in New Jersey**

A pilot program conducted with six young children diagnosed with autism and their parents over nine weeks was designed to see if yoga could have a positive impact. The sessions began with participants in a relaxation pose while the instructor guided the students through a brief visualization and ended with a calming breath technique. Various poses were sequenced as follows: kneeling poses, inverted poses, supine poses, prone poses, and standing poses. The teacher demonstrated poses, guided breathing in poses, provided yoga cards as visuals and incorporated yoga games. Miriam Behar conducted the classes and is a certified yoga instructor and a pediatric occupational therapist with a degree in group counseling. The results of the pilot program were collected by parent questionnaire. Based on parent reports, the findings showed improvements in skills related to attending to tasks, ability to transition between activities, and ability for participants to independently calm themselves. Parent reports indicated that children were independently utilizing breathing techniques or utilizing these techniques given a verbal prompt when needed (Behar, 2006).

## **Creative Relaxation Pilot Study**

A pilot study was conducted with six upper elementary students diagnosed with autism that were transitioning to middle school in the near future. These students were chosen because parents and teachers reported symptoms of anxiety. The students participated in 30 minute sessions, three times a week for approximately eight weeks. The program consisted of yoga poses, breathing exercises, role-playing, guided imagery, discussion, visual aids, music and soft lighting, stories, and mnemonics. Parent and teacher observations of breathing patterns, muscle tone and pulse rates were used to determine the impact on stress levels of the students. The results concluded overall lower stress levels for the students and the students had lower mean pulse rates, following the yoga session (Goldberg, 2004).

#### Summary of Yoga Programs for Children and Adolescents with ASD

The few yoga programs available that study the efficacy of yoga for children and adolescents with ASD demonstrate preliminary evidence of the potential benefits for this population. The yoga programs resulted in decreases of challenging behaviors, stress, depression and increases with attending skills, self-regulation and imitation skills. These improvements provide insight for the possibilities of yoga as an intervention for adolescents with ASD. In addition to the decrease in stress, the Relaxation Response program promotes the possibility of a yoga program incorporating sensory activities as an effective intervention for individuals with ASD. Considering the variety of needs of adolescents with ASD, a yoga program may be an effective approach in prevention and management of stress and anxiety, alleviating sensory processing difficulties and increasing physical activity.

## Stress and Anxiety for Adolescents with ASD

Individuals with ASD are at high risk for developing anxiety disorders. Anxiety disorders can interfere greatly with an individual's participation in home, school, and community activities. Anxiety can lead to social withdrawal, nervous or repetitive movements, difficulty with attention or cognitive function, easy arousal to anger/frustration, impairments in memory, sleep disturbances, poor decision making, and difficult calming (Lytle & Todd, 2009). Anxiety can be a significant concern for adolescents with ASD because research indicates that stress increases with age for individuals with ASD (Goodwin, Groden, Velicer & Diller, 2007).

Multiple factors influence how an individual with ASD is affected by anxiety symptoms. These factors can include the severity of core deficits and cognitive deficits, additional medical disorders, and the ability to cope with one's disability (Reaven et al., 2009). Core and cognitive deficits for individuals with ASD affects every aspect of their day to day functioning and involvement in any given activity. These core and cognitive areas at risk for promoting stress in individuals with ASD are communication, socialization, sensory, executive function, hardiness and challenging behaviors (Baron, Groden, Groden & Lipsitt, 2006).

There are various reasons core and cognitive deficits can cause stress for individuals with ASD. Communication for people with ASD can cause stress because of deficits in expressing feelings, comprehending complex language, limitations in comprehending a fast speaker or understanding a message while multiple people are speaking. The inability to engage in conversation may be another stressor. People with ASD can lack skills to maintain a conversation, take turns when speaking, starting/ending a conversation appropriately or remaining on a topic of interest to others (Baron, Groden, Groden & Lipsitt, 2006). Socialization can promote stress due to the inability to form social relationships because of lack of eye contact, attachment to objects, or desire to be alone (Baron, Groden, Groden & Lipsitt, 2006). Sensory impairments in auditory, visual, and tactile areas can also lead to stress for people with ASD. Difficulties processing stimuli, such as different textures of clothing or food, and touch can produce heightened responses in everyday situations (Lytle & Todd, 2009). Executive functioning which includes planning, inhibition, flexibility, organization, and self-monitoring are important abilities to buffer stress. Yet, people with ASD can lack these vital skills. Hardiness is the ability to accept challenges, have commitments, development of confidence and selfcontrol which facilitates family adjustment and adaptation. These skills that promote quality of life also are often deficits for people with ASD. Lastly, challenging behaviors, which can include tantrums, aggression, self-injurious behaviors, need for sameness, or rigid routines can create stress. Interestingly, it has been suggested that challenging behaviors may function as coping strategies to stressful situations for people with ASD. In other words, the inability to solve problems or reduce stress can trigger inappropriate

coping strategies like crying, yelling or displaying challenging behaviors (Baron, Groden, Groden & Lipsitt, 2006).

The current author found it noteworthy to research a study demonstrating stress in relation to adolescents with ASD. This study by Groden et al. (2005), measured stress in 10 individuals with ASD, ages 13-37, using a heart monitor to measure heart rate. The stress domains measured were changes/threats (engagement in difficult task), pleasant events (eating preferred food), anticipation/uncertainty (unstructured time) and unpleasant events (change in staff). All stress domains resulted in increased heart rate. Unstructured time and eating a preferred food increased heart rates by 60%, and researchers hypothesized that eating a preferred food. The difficult task increased heart rate due to restrictions of portions of preferred food. The difficult task increased heart rate by 40% and change in staff increased heart rate by 20%. The study demonstrated elevated heart rates in all the domains measured, concluding that participants with ASD are prone to stress during daily activities (Groden et al., 2005).

## Interventions for Stress and Anxiety for Individuals with ASD

Intervention strategies to reduce stress may include manipulation of the environment, systematic communication, providing choices, relaxation breaks and exercise. Manipulation of the environment can be elimination of distractions in the environment such as loud noise, bright lighting, or distracting objects. These manipulations to the environment may reduce stress for adolescents with ASD who may have sensory sensitivities (Lytle & Todd, 2009). Accommodations to the environment can also include daily schedules to provide a structured routine and incorporation visual supports. Communication strategies used by instructors can eliminate stressors for individuals with ASD who can have deficits in comprehending instructions. These strategies can include utilization of task analysis (breaking things down in manageable steps) or simple and clear instructions (Baron, Groden, Groden & Lipsitt, 2006). Providing choices for an individual with ASD can increase feelings of independence, promote engagement and interest. Whereas, limited choice can cause stress due to individuals feeling powerless. Relaxation breaks with calming sensory activities can also reduce stress. Examples of relaxation activities to reduce stress are listening to music, watching lava lamps, smelling fragrant lotions or movement activities (i.e. walking, bouncing, swinging or stretching). Individuals with ASD are better able to self-regulate behavior given opportunities to take breaks and participate in relaxation activities to help soothe and calm (Lytle & Todd, 2009). Exercise is another proven method in reduction of challenging behaviors and can increase attending skills (Lang et al., 2010).

Anxiety symptoms in adolescents with ASD are typically treated with medications and more recently cognitive-behavioral treatments (CBT) (Reaven et al., 2009). CBT teaches the individual "adaptive coping skills and provides practice opportunities to develop a sense of mastery over anxiety symptoms or situations that are associated with distress and impairment" (AACAP, 2007). Research on CBT for individuals with ASD is limited, but it is being implemented with success. Moreover, CBT has been proven beneficial in reduction of anxiety for typically developing children and adolescents (Reaven et. al, 2009). CBT modified for individuals with ASD focuses on alleviating cognitive deficits regarding emotions and cognitive distortions. These deficits involve immaturity in expression of emotions, limited vocabulary of emotional expressions, and a lack of efficacy in utilizing a range of appropriate emotional repair mechanisms. Cognitive distortions can include misunderstanding of someone's intentions, tendency to make a literal interpretation of what someone says or does, and dysfunctional reasoning (Attwood, 2004).

In a pilot study by Raeven, et al. (2009), children with ASD, ages 7-14 years, participated in a cognitive behavioral group treatment. The 12 week program consisted of children identifying their anxiety symptoms and being provided with tools/strategies to treat anxiety symptoms. The anxiety symptoms were measured using the Screen for Child Anxiety and Related Emotional Disorders (SCARED), which provides 40 statements that relate to five types of anxiety experienced by children. The five types of anxiety measured were panic symptoms, generalized anxiety, separation anxiety, social anxiety and school anxiety. The tools/strategies provided were progressive muscle relaxation, deep breathing, and positive coping statements. The program ended with children making short films depicting themselves facing fears in a variety of settings. There was a parent training component that taught parents how to identify anxiety symptoms and strategies for reducing anxiety in their children. The results from parent SCARED reports demonstrated significant decreases in anxiety symptoms in their children. These results suggest the potential efficacy of using CBT for individuals with ASD (Reaven et. al, 2009).
#### Summary of Stress and Anxiety for Adolescents with ASD

As previously discussed, adolescents with ASD are vulnerable to multiple stressors in their daily lives due to core and cognitive deficits. Daily stresses can be avoided using simple techniques like manipulating the environment, using systematic communication strategies, providing choices, relaxation breaks, and exercise. Interventions for adolescents with ASD that incorporate CBT techniques may be highly effective in addressing anxiety symptoms. Quality interventions that take a preventative approach and provide ongoing management of stress and anxiety should be developed for adolescents with ASD because of the high risk of stress and anxiety.

Of note, yoga incorporates some of the strategies found to be effective in reducing stress and anxiety. Yoga reduces stress and anxiety through the use of breathing exercises, yoga poses and other relaxation activities (i.e. guided imagery or meditation). Practitioners of yoga carefully prepare their environment before a practice and remove distracting objects and incorporate relaxing elements (i.e. scented candles or calming music). The communication style during a yoga practice utilizes simple instructions, visual explanations of yoga poses and calm/soft tone of voice. Yoga provides a variety of poses and styles to choose from enabling an abundance of choice for individuals seeking out a yoga practice.

#### Sensory Processing Difficulties for Adolescents with ASD

Sensory processing difficulties are primarily studied in children with ASD, but a recent study found that adolescents with ASD have the presence of atypical sensory processing (De La Marche, Steyaert & Noens, 2012). Difficulties processing sensory

stimuli may include not responding to the environment, oversensitivity to the environment, or seeking out more sensory input (Simpson et. al, 2004). Individuals with sensory processing difficulties can react to sensory stimulation with a hyper-reactive (overrreactive) response or hypo-reactive (underreactive) response. Hyper-reactive responses process harmless sensations as dangerous or painful and hypo-reactive responses require higher levels of stimulation to respond to their environment. Individuals who are hyper-reactive may avoid touch from others, become agitated during hair washing or brushing, gag/avoid certain food textures, have sensitivities to loud noise or have gravitational insecurities with movement (i.e. ramps or swings). Individuals who are hypo-reactive may appear to be immune to pain, chew inedible objects, bump or crash into things, tire easily and/or avoid contact with others (Arnwine, 2007).

A current study exploring the sensory processing difficulties in adolescents with ASD is the first one completed focusing only on this population. The study by De La Marche, Steyaert & Noens (2012) included 80 participants with ASD, ages 11-18, without an intellectual disability due to the nature of the research and their siblings without ASD. Adolescents with ASD and their siblings completed a self-report questionnaire called The Adolescent/Adult Sensory Profile (AASP). The AASP is a 60 item self-report questionnaire assessing responses to everyday life sensory experiences. AASP contains four quadrants to measure sensory processing difficulties: low registration, sensation seeking, sensory sensitivity and sensation avoidance. Scores on all four quadrants showed significant differences between adolescents with ASD and their siblings without ASD. The sensory profile for adolescents with ASD showed a lower tendency to seek new sensations and a higher tendency to avoid sensations. The researchers concluded that this demonstrates two ways in which adolescents with ASD in this study minimize sensory input. They further discovered that adolescents with ASD have the presence of atypical sensory processing (De La Marche, Steyaert & Noens, 2012).

#### **Interventions for Sensory Processing Difficulties**

Sensory processing difficulties are often treated by occupational therapist trained in sensory integration (SI). Occupational therapists identify sensory difficulties and provide methods to engage individuals in therapeutic activities or create a sensory diet (Sensory Processing Disorder Foundation, 2012). A sensory diet is a variety of sensory activities that help an individual interpret his or her environment (Arnwine, 2007). The main sensory systems used to create sensory activities are proprioceptive (muscles and joints), vestibular (movement and balance), and tactile (touch) (Simpson et al., 2004). Examples of proprioceptive activities are lifting heavy items or weights, push/pulling heavy items, firm massages, or wearing weighted vests. Vestibular activities may include jumping, spinning, swinging, hanging upside down or running. Tactile activities can be the exploration of a variety of textures, such as sand, rice, clay, shaving cream or water. Additional tactile activities may be playing with squishy or vibrating toys, brushing and joint compression or massage (Sensory Smarts, 2012).

Although SI primarily focuses on proprioceptive, vestibular, and tactile senses, other sensory systems can be of concern. Intervention based activities can also address oral, auditory, visual and olfactory (smell) difficulties (Arnwine, 2007). Oral motor based activities that stimulate blowing and chewing can help with individuals that have feeding issues related to textures. Auditory activities that expose individuals to a variety of noises may help individuals with aversions to loud and unfamiliar noises. Visually stimulated activities that provide eye exercises may help individuals that have difficulties tracking words while reading. Stimulating smell can provide comfort for individuals that enjoy smelling numerous items in their environment (Arnwine, 2007). These additional sensory systems are not the main focus of SI therapy, but can be beneficial for individuals with ASD in regulating responses to sensory stimuli (Miller, Nielsen, Schoen & Brett-Green, 2009).

#### Summary of Sensory Processing for Adolescents with ASD

Although sensory processing difficulties have not been studied in adolescents with ASD, there is preliminary evidence that sensory processing is an issue for this population (De La Marche, Steyaert & Noens, 2012). Interventions that incorporate sensory activities may be effective for adolescents with ASD to relate and interpret their environment. As mentioned in Chapter One, sensory processing difficulties can affect participation in daily life and activities (Miller, Nielsen, Schoen & Brett-Green, 2009). Interventions that address sensory processing difficulties may include pulling heavy items, jumping, swinging and exploring a variety of textures (Sensory Smarts, 2012).

Not surprisingly, yoga may address proprioceptive sense through weight bearing yoga poses like the down dog pose. Vestibular senses may be addressed by balancing poses like the tree pose. The tactile senses may be stimulated with bare feet on a yoga mat or the physical touch of the instructor. Oral motor may be addressed with breathing exercises or activities that require blowing. Auditory senses may be stimulated through calming music and sense of smell with the use of scented candles or lavender eye bags. Lastly, visual sense may be addressed through following the instructor's movements to comprehend poses. Clearly, yoga may have the potential to stimulate a variety of senses for adolescents with ASD that have difficulties with sensory processing.

#### Physical Activity for Adolescents with ASD

Research studies demonstrate that adolescents with ASD have lower rates of physical activity compared to their typically developing peers (Borremans, Rinatala & McCubbin, 2010; Pan, Tsai, &Hsieh, 2011). As discussed in Chapter One, obesity is a health problem for children and adolescents with ASD. A factor in the reduction of physical activity is decreased opportunities for physical activity as these children age. A study on the barriers to physical activity for children with ASD, ages 8-14 years, found that interpersonal, interpersonal and community barriers decreased participation in physical activity. These barriers included participation in sedentary activities, lack of same-age exercises partner, lack of parent's commitment, lack of transportation to physical activity facilities, and lack of opportunities to participate in physical activity programs (Obrusnikova & Cavalier, 2010). The barriers identified for reduced physical activity may be similar issues for older adolescents with ASD.

The current author researched additional factors that might impact physical activity for adolescents with ASD. A study on the potential factors that might influence physical activity for middle school students with ASD, age 14 years, measured physical activity with an accelerometer, which measures human motion and steps. The study found that the following factors contributed to higher physical activity: fitness testing, free-play activities, classes taught by female teachers and noncertified teachers, and activities outdoors or in combined spaces. Lower physical activity was found with team activities, individual activities, classes taught by male teachers and certified teachers, and activities indoors. This study provides preliminary insight to possible factors that may increase physical activity for adolescents with ASD (Pan, Tsai & Hsieh, 2011).

In addition to the health benefits associated with exercise, researchers have found that physical exercise can reduce challenging behavior in children and adults with ASD (Sowa & Meulenbroek, 2012). Challenging behavior impacted by physical exercises can include aggression, self-injurious behavior, and stereotyped behavior (Weiss, Perry & Wells, 2010).

#### Strategies for Teaching Physical Exercise to Individuals with ASD

Physical exercise interventions include similar strategies to the stress interventions discussed earlier. Considerations to the physical layout of a room, establishing a routine, utilizing visuals, awareness of sensory sensitivities and communication strategies are some of the similar strategies identified to teach physical exercise (Groft-Jones & Block, 2006). In regards to physical layout of the room, similar emphasis is on elimination of distractions and incorporation of visuals cues to aid in comprehension of specific skills. Clearly marking boundary areas and providing a space for individuals with ASD to have a break away from the given activity are additional physical exercise strategies that can be incorporated into physical exercise. Strategies that help establish a routine in physical exercise can be providing an assigned spot, performing simple consistent warm-up activities before introducing a new skill and ending the class with the same calming activity. Examples of activities provided as calming activities are breathing exercises or yoga-type poses. A visual strategy that can be useful for physical exercise is a visual schedule with pictures of specific activities that will be completed during class and providing a folder labeled finished, so that students can move over pictures of completed activities (Groft-Jones & Block, 2006). This strategy can provide a sense of accomplishment and eliminate confusion of expectations. Strategies to address sensitivities in physical education are using hand signals instead of whistles or yelling, allowing students with ASD to wear headphones to block loud noise or allowing students to take breaks away from gyms that can be crowded and loud. Communication strategies that help when teaching physical exercise are using colored tape when providing demonstrations to highlight areas of the body, minimizing the use of jargon, and providing simple verbal directions (Groft-Jones & Block, 2006).

The literature discussed proactive strategies for prevention of challenging behaviors to support teaching physical exercise (Groft-Jones & Block, 2006). Strategies may include positive reinforcement, teaching students with ASD how to appropriately use props and equipment, and as previously mentioned allowing breaks. Possible reinforcers for students with ASD can be social praise (i.e. high fives or verbal encouragement), tangible items (i.e. stickers or books), or access to desired activities (i.e. computer games or bouncing a ball). Inappropriate use of props and equipment may be avoided if students with ASD are instructed how to use these items. When allowing students with ASD to take breaks, one should take into account that the amount of time needed for a break could be much longer than anticipated. A student with ASD may need a lengthy amount of time to calm down and recover before being able to participate in activities void of challenging behaviors (Groft-Jones & Block, 2006).

#### Summary of Physical Activity for Adolescents with ASD

There is a need for individualized approaches to increasing physical activity for adolescents with ASD. Existing physical education programs emphasize evaluation of motor skills and assessment is reliant on performance based standards (i.e. timed running trials). Adolescents with ASD may find non-competitive physical education to be a safe and comforting environment which may promote exercise as a lifelong activity (Borremans, Rintala & Mc Cubbin, 2010).

Yoga is one such program that is highly individualized and noncompetitive. Additionally, yoga incorporates a variety of relaxation elements that further contribute to a comforting and nonthreatening environment. Interventions used to teach physical exercise that are included in yoga are clearly marking boundaries, providing visuals, utilizing colored tape, allowing breaks and addressing sensory sensitivities. Yoga is practiced on a yoga mat which provides a clearly marked boundary for adolescents with ASD. In addition, visuals and instructor's physical demonstration of yoga poses can aid in comprehension. Colored tape can be used to help adolescents with ASD understand where to position body parts during a yoga pose. Breaks are encouraged during yoga and students are able to rejoin the practice at their own pace. Lastly, instructors speak in soft and calming tones, provide relaxing music and use dimmed lighting which can be helpful for adolescents with ASD who have sensory sensitivities.

#### Conclusion

Adolescents with ASD have challenges with stress and anxiety, sensory processing and maintaining physical fitness. Research has shown that yoga for typically developing children and adolescents has the potential to reduce stress and anxiety, and increase ability to concentrate and attend, and develop motor skills. The limited available research on yoga programs for children and adolescents with ASD has demonstrated decreases in challenging behaviors, stress and depression. Additionally, increases have been found in the areas of attending, self-regulation, and imitation skills. There is a need for alternative interventions beyond medications; therefore, yoga for adolescents with ASD should be explored. The following chapters will present how a yoga curriculum for adolescents with ASD was developed incorporating preventative strategies for stress and anxiety, sensory concepts, and encouragement of independent yoga practice to increase physical activity.

#### Chapter 3

#### **METHODS**

The methods used to develop the yoga lesson plans for adolescents with ASD will be discussed in this chapter. The discussion will cover the focus and rationale for designing lesson plans for adolescents with ASD with limited reading skills. A detailed explanation of the research process in developing the lesson plans and the writing and editing process will be reviewed.

#### **Rationale and Focus of the Yoga Curriculum**

The current author's personal experience with practicing yoga and experiencing the stress reducing benefits, combined with a background in teaching children and adolescents with ASD, ignited interest in research of yoga and ASD. In reviewing literature, it was discovered that there were scarce resources regarding yoga and ASD. There is minimal scientific research demonstrating the benefits of yoga for children and adolescents with ASD. The research that is available indicates improvements in challenging behaviors (Koenig, Buckley-Reen & Garg, 2012), imitation skills (Radhakrishna, 2010), attending skills, ability to transition to different activities, ability to independently remain calm (Behar, 2006), and in lowering stress levels (Goldberg, 2004). The majority of these studies focus primarily on younger children with ASD. However, there are growing anecdotal reports of the potential benefits of yoga for adolescents with ASD with gains in the areas of learning, health, social interactions, emotional well-being and sensory processing (M. Flynn, personal communication, October 22, 2012). Online research indicated that yoga instructors and professionals are implementing yoga with adolescents with ASD, but there is no defined curriculum targeting this population. Yoga curriculum for typically developing adolescents does not include adaptations for adolescents with ASD. To help remedy this situation, this current project developed a yoga curriculum with a multidisciplinary approach to include coping strategies to stress, incorporate of sensory concepts, and promote physical activity. Most importantly, the yoga curriculum will teach adolescents the benefits of yoga and how to practice key concepts independently or with minimal assistance depending upon their individual learning styles.

Initially, the focus of the curriculum was for young children with ASD, however the current author's advisor suggested investigating the benefits of yoga for adolescents with ASD. This proved to be a greater area of need because there was only one yoga resource found by this current author that included adolescents with ASD (Peaceful Pathways, 2012). The current author contemplated the advantage of systematically teaching adolescents with ASD the benefits of yoga to improve well-being and this reinforced the decision to focus on this population. Furthermore, adolescents with ASD have higher prevalence rates of anxiety, sensory processing difficulties and obesity; while they have less access to programs that take a multidisciplinary approach in addressing a variety these needs. Thus, adolescents with ASD have a significant need for the development of a yoga curriculum.

#### **Research in Developing the Lesson Plans**

Researching yoga and ASD was challenging due to the limited resources. The current author researched literature pertaining to yoga for adults, yoga for typically

developing children and adolescents, and yoga programs for children and adolescents with ASD. The concentrated areas of research for adolescents with ASD were anxiety and stress, sensory processing difficulties, and physical activity. In addition the interventions utilized to address these concerns were explored. Online research of yoga techniques and informal conversations with yoga instructors teaching yoga to adolescents with ASD aided in the development of the lesson plans. The current author organized and filed literature based on category and cited references as they were utilized.

The literature was gathered via online searches of educational journals, research articles and books. The current author purchased the four books about yoga and children with special needs that included ASD. These books served as a point of reference in adapting breathing exercises and choosing yoga poses for adolescents with ASD. The yoga poses were chosen based on the book Yoga for Children with Autism Spectrum Disorders: A Step-by-Step Guide for Parents and Caregivers. The yoga poses outlined in this book were chosen by the authors because they found them to effective in calming, relieving stress, and strengthening muscles. Betts and Betts (2006) believed these poses to be beneficial for children with ASD because they are less intimidating and physically demanding (Betts & Betts, 2006). The current author decided these poses were also appropriate for adolescents with ASD without prior yoga experience because of the simplicity. Furthermore, to make the yoga curriculum accessible for teachers without prior experience, the yoga poses chosen for the curriculum needed to be easy to learn and implement. The current author reviewed online sources that offered detailed explanations of breathing exercises and yoga poses to facilitate planning of lesson plans. In addition,

she contacted three yoga instructors teaching yoga to adolescents with ASD and received written samples of instructions to teach yoga concepts to students. The website called Omazing Kids that gathers research, ideas, books, and connects individuals interested in yoga for children/adolescents with special needs was utilized in the organization of updated information. The creator of the website, Angela Moorad, created a powerpoint presentation called *Therapeutic Yoga for Kids and Teens with Autism* that assisted in the structure of the lesson plans. The presentation information outlined basic information about yoga, provided examples of techniques and benefits of types of yoga poses. This information helped with making decisions of what types of techniques to utilize for the lesson plans. Additionally, Angela Moorad was a helpful resource in concluding that there were not any yoga curriculums available for adolescents with ASD (A. Moorad, personal communication, October 16, 2012).

A particularly difficult process for the author was choosing the research concentration areas for adolescents with ASD demonstrating the potential benefit of yoga. The current author concluded anxiety and stress to be a main focal point due to high prevalence rates and lack of prevention and coping strategies that was discovered during research. Cognitive behavior strategies were researched in the development of the lesson plans to integrate coping strategies to stress. The current author adapted concepts from *Exploring Feelings: A Cognitive Behavior Therapy Program for Managing Anxiety* (Atwood, 2004). This resource helped in the development of systematically defining the concepts of "relaxed" and "anxious" for adolescents with ASD. Encouraging independent yoga practice was recognized to be of importance from research indicating the lack of physical activity in adolescents with ASD and high obesity rates. Research on sensory concepts in relation to yoga was chosen due to high prevalence rates of sensory processing difficulties in individuals with ASD and anecdotal evidence of yoga's ability to address these issues (Cuomo, 2007). Researching the areas of anxiety and stress, sensory processing difficulties and lack of physical activity concluded that these were main areas of concern for adolescents with ASD and should be areas of concentration to address in the yoga lesson plans.

The teaching strategies that were incorporated into the lesson plans were based on the interventions from the literature review that were identified to reduce stress and teach physical exercises. The strategies used in the lesson plans were manipulation of the environment, systematic communication, utilizing task analysis, multiple visuals, providing choices, incorporating relaxing elements, encouraging breaks and utilizing colored tape. Manipulation of the environment included the use of dimmed lighting, soft and calm noises, and removing distracting objects. The systematic communication used was simple and clear language and scripting for instructors to teach concepts. Multiple visuals are provided in every lesson to enhance the concept being taught. Throughout the lessons, students are given opportunities to make choices. Specifically, in Lesson Eight, adolescents with ASD are taught to use pictured sentence strips to choose breathing exercises or yoga poses as a coping strategy to stress. The relaxation elements used to reduce stress are music, breathing, stretching, visualizations, lavender eye pillows and candles. Additionally, yoga is taught in a specific sequence which provides a familiar routine for adolescents with ASD. A yoga routine begins with breathing exercises and

warm up poses, then ends with relaxation poses. Breaks are encouraged and adolescents with ASD are prompted to take one at any time and rejoin when they feel ready. The last strategy used was colored tape to aid in understanding of where to position body parts during a yoga pose.

Sensory activities and yoga poses that were chosen to integrate into the lesson plans were based on the research of interventions for sensory processing difficulties. Weight bearing poses like the "down dog" pose were chosen to provide proprioceptive input. Balancing poses like the "tree" pose were chosen to provide vestibular input. Tactile input is naturally incorporated in a yoga practice by physical prompts from the instructor and bare feet on the mat. Oral input is stimulated through blowing activities and breathing exercises. Auditory input is stimulated with the use of relaxing music. The sense of smell is stimulated with the use of lavender eye bags and scented candles. Lastly, the visual sense is achieved by following the instructor's movements to comprehend a yoga pose.

#### Writing and Editing the Lesson Plans

The writing process was stimulated through researching yoga practices from books, online sources and informal conversations from yoga instructors. The organization of the curriculum was based on teaching strategies, collaboration with yoga instructors teaching yoga to adolescents with ASD, and the current author's personal experience in teaching adolescents with ASD. The compilation of this information assisted in the development of a yoga curriculum for teachers to utilize that is easy to implement without prior yoga experience. A rough draft of the lesson plans were reviewed by two colleagues; the first colleague was a special education teacher and yoga instructor who has taught yoga to elementary students with ASD in a classroom setting and the second colleague was a behavioral therapist with experience working with adolescents with ASD. Improvements made to the lesson plans were based on the following suggestions: defining sensory terminology in the introduction, revising phrasing for instructors to ensure comprehension, different sequencing of the yoga routine for maximum calming benefits and additional directions for instructors to promote body awareness during the yoga routine. The final product is a user-friendly yoga curriculum that systematically teaches yoga, the benefits of a yoga practice, and how to utilize yoga as a coping strategy to stress for adolescents with ASD. Lastly, the current author contacted Angela Moorad from Omazing Kids and she agreed to make the yoga curriculum available online as an additional resource for users.

#### Chapter 4

#### DESCRIPTION OF THE PROJECT, DISCUSSION, AND RECOMMENDATIONS

The following chapter will be arranged into three sections: a) a description of the yoga curriculum; b) evaluation and dissemination of the yoga curriculum; and c) recommendations for future practice and research.

#### **Description of the Yoga Curriculum**

Yoga is a beneficial mind body intervention that may have the potential to address a variety of issues for adolescents with ASD. Interventions commonly used for adolescents with ASD rarely take a multidisciplinary approach and typically focus on a specific deficit (Kenny, 2002). Yoga may help reduce stress and anxiety, address sensory processing difficulties, and increase physical activity, which are all areas of concern for adolescents with ASD. The current author researched yoga curriculums for adolescents with ASD and found that there were not any available. Therefore, a systematic yoga curriculum, Yogi Breaks, was developed for adolescents with ASD to combine stress prevention and coping strategies, integrate sensory concepts, and advocate independent yoga practice to increase physical activity.

Yogi Breaks consists of an introduction, nine yoga lesson plans for adolescents with ASD, a supplemental guided imagery activity, and a list of additional resources and references. The introduction includes an overview of the curriculum, the benefits of yoga for adolescents with ASD, brief descriptions of teaching strategies and sensory concepts utilized in the lesson plans, an explanation of the components in the lesson plans, and quick and useful online resources with detailed explanations of yoga poses. The nine lesson plans incorporate stress prevention and coping strategies. Each of the lesson plans has the same components to facilitate an easy to read and implement approach. The first component is titled "Explain" which systematically teaches a concept using visuals and utilizes simple and clear language. The visual provided is a handout with three to four sentences and highlights key words using symbols from the program Boardmaker. The second component is called "Engage" which reinforces the concept taught with activities or group discussions to enhance meaning. The third component is labeled "Explore" which provides a hands on activity related to the concept taught. The fourth component is called "Evaluate" and this prompts instructors to check comprehension of the hands on activities that were taught. The last component titled "Extend" provides students with a homework activity that reinforces the main concepts that were taught that day. Additionally, after Lesson One, a section called "Review" is provided to reinforce the main concepts that were taught from the previous lesson.

Lesson One begins with teaching students awareness of how they breathe. The lesson takes a systematic approach and provides hands on activities to demonstrate the parts of the body utilized when breathing. The objective is to teach students the correct way to breath and introduces that breathing can be beneficial. Lesson Two teaches students that breathing can help them feel relaxed. The lesson identifies the benefits of feeling the relaxed, defines "relaxed" and allows students to explore what makes them feel relaxed. Lesson Two ends with teaching students a breathing exercise called ocean breath, which is the type of breathing used during a yoga routine. Lesson Three reinforces the meaning of "relaxed" by providing various words and pictures that mean "relaxed" and prompts students to choose what "relaxed" means to them. This lesson ends with teaching a breathing exercise called rabbit breath, which promotes relaxation. Lesson Four teaches students how their body feels when it is relaxed. The lesson provides an activity to demonstrate that a slow heart beat and slow breathing means your body is relaxed. Lesson Four ends with teaching the breathing exercise lion breath, which aids in the ability to focus.

Lesson Five transitions to the introduction of yoga. This lesson defines yoga and identifies that yoga may help people feel relaxed. Students are taught three relaxing yoga poses, "rock," "sleep," and "forward bend". Lesson Six defines "anxious," identifies the potential of yoga to stop anxious feelings and allows students to explore what makes them feel anxious. The lesson ends with students learning three stretching yoga poses, "down dog," "cobra," and "bridge". Lesson Seven reinforces the meaning of "anxious" by providing various words and pictures that mean anxious and prompts the students to choose what anxious means to them. Students are taught three balancing yoga poses, "tree," "chair," and "triangle". Lesson Eight teaches students how their body feels when it is anxious. The lesson provides an activity to demonstrate a fast heart beat and fast breathing means your body is anxious. This lesson's main activity is to introduce that breathing exercises and yoga poses can be used as a coping strategy to deal with anxious feelings. Visuals are provided with the breathing exercises and yoga poses that have been taught. A sentence strip is utilized to aid in comprehension of using breathing exercises and yoga poses as a coping strategy. The sentence strip is written as, I feel...I can...to relax. Students are provided with six pictures that mean "anxious" to put after "I feel."

After "I can," pictures of breathing exercises and yoga poses are provided for students to choose. Students are given hands on guidance to use these sentences strips as a coping strategy.

The final lesson, Lesson Nine, teaches a yoga routine. A yoga routine is defined, props that will be used are identified and the benefit of a yoga routine is described. A visual with the rules to use during a yoga routine is provided. The homework sent home with students for this lesson it to set up a relaxation corner at home to practice yoga. Students are prompted to choose what relaxation props to put in their corners. Finally, a supplemental activity is provided as an additional relaxation resource for students and teachers. The supplemental activity gives teachers instructions to perform guided imagery with students. The guided imagery aids students in visualizing that they are at the beach to promote relaxation.

Yogi Breaks is targeted for adolescents with ASD with limited reading skills. Each lesson provides numerous visuals, systematically teaches concepts and reviews subject matter that is presented. The current author believes that the lesson plans have been developed to include adolescents with ASD at a variety of learning levels. The variety of components in the lesson plans have been developed to aid in participation of all adolescents with ASD. The current author's teaching background with adolescents with ASD was crucial in the development of a meaningful and multidisciplinary approach in teaching yoga as a coping strategy to stress for adolescents with ASD.

#### **Evaluation and Dissemination of the Yoga Curriculum**

Yogi Breaks was designed to be easy to use and implement by teachers of adolescents with ASD, without prior experience with yoga. A rough draft of the curriculum was critiqued by the author's colleagues, but was never field tested. Therefore, the effectiveness of the yoga program is yet to be determined. In the future, it should be assessed by teachers implementing the program with adolescents with ASD and providing suggestions for improvements and observations of student's utilizing sentences strips as a coping strategy for stress. Nevertheless, based on the author's teaching background with adolescents with ASD and input from her colleagues, a special educator teacher/yoga instructor and behavior therapist with experience working with adolescents with ASD, the author is confident that the lesson plans will be a useful resource. The current author will provide the lesson plans online via OMazing Kids; this is the only website the author was able to locate that provided detailed resources, research and information about yoga that includes adolescents with ASD. Therefore, the current author thought this would be an appropriate website with which to collaborate to provide lesson plans for professionals interested in yoga for adolescents with ASD. Before dissemination to the OMazing Kids website and schools, the author will gather special education teachers who teach adolescents with ASD to review and utilize the yoga curriculum and provide feedback regarding issues, concerns and suggestions to enable the author to provide an optimum yoga curriculum. Finally, the current author plans to email copies of the yoga curriculum to schools in the Sacramento area that are known for teaching adolescents with ASD. The development of this yoga curriculum is the

beginning for this author in spreading information and resources to teachers, professionals and parents regarding the benefits of yoga for individuals with ASD. The author is passionate that when yoga is taught in a meaningful way, it may positively affect individuals with ASD.

#### **Recommendations for Future Practice and Research**

One recommendation for research is that the impact of the yoga curriculum should be investigated. Questions that could be examined may include, "Do students use the strategies in the curriculum to cope with stress?" and "Do students display calm behavior following the practice of a yoga routine?" Another question regarding the efficacy of the program to promote physical fitness could be, "How frequently are students practicing yoga at home?" The yoga curriculum, if found effective, could be model for all students with ASD or special needs for prevention and coping strategies for stress with additional benefits for sensory processing difficulties and physical fitness.

Another research recommendation is gathering teacher evaluation regarding the accessibility of the yoga program. To explore if teachers believe the program is easy to implement and to get further suggestions to create an effective program. In addition, research should investigate students' comprehension of the concepts taught in the yoga curriculum. These efforts will further enhance the development of this curriculum.

Coping strategies to handle stress should be a daily practice in classroom settings for all students with ASD or specials needs, including adolescents with ASD. To enable meaningful learning opportunities for adolescents with ASD, prevention and management of stress is necessary. Future research should focus on examining the effect of comprehensive yoga programs for adolescents with ASD on the prevention and maintenance of stress. Additionally, scientific research on the benefits of existing yoga programs (not adapted for adolescents with ASD) and detailed descriptions of specific yoga poses and techniques utilized should be completed. This research will aid in the development of reputable yoga programs and stimulate the use of yoga as an applicable practice for adolescents with ASD.

Teacher training programs should provide more awareness of prevalent issues for individuals with ASD, including adolescents with ASD. Alternative interventions, like yoga, that complement and integrate scientifically researched interventions should be examined and implemented. Additionally, awareness of stress related issues and a variety of coping strategies should be provided for teachers to implement with adolescents with ASD. Teacher awareness of prevalent issues, such as stress and anxiety, sensory processing difficulties and lack of physical activity may assist teachers in achieving greater efficacy when teaching individuals with ASD, including adolescents with ASD.

Furthermore, interventions for adolescents with ASD should have a more multidisciplinary approach because of the dynamic needs of each individual. One of the most challenging issues in teaching adolescents with ASD is that there are a variety of needs and that each individual is affected differently. There is no formula for teaching adolescents with ASD; therefore, incorporating a variety of strategies and concepts are essential in providing ideal learning opportunities. In particular, the development of future programs should take into consideration issues such as stress and anxiety, sensory processing difficulties and lack of physical activity. Although, adolescents with ASD have a variety of needs and learning styles, the development of more comprehensive programs and approaches continue to be an area of need.

APPENDIX

# APPENDIX A: YOGI BREAKS: A YOGA CURRICULUM FOR ADOLESCENTS WITH AUTISM SPECTRUM DISORDERS

# Yogi Breaks: A Yoga Curriculum for Adolescents with Autism Spectrum Disorders



By Tara Delgado-Bridges Sacramento, CA 2012

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### Introduction

Yogi Breaks was developed for adolescents with Autism Spectrum Disorders (ASD). The lesson plans systematically teach yoga, incorporate visuals, and provide hands on activities. The objective of Yogi Breaks is to teach adolescents with ASD how to prevent and cope with stress using breathing exercises and yoga poses. The curriculum ends with "I feel" sentence strips to provide a visual prompt and aid students with independently utilizing coping strategies for stress. The curriculum was designed to be easy to use and implement for professionals working with adolescents with ASD without prior yoga experience or knowledge.

#### Why yoga for adolescents with ASD?

Yoga, a mind body intervention, and is becoming more popular amongst professionals working with individuals with ASD. Most resources available are targeted for younger children with ASD. Adolescents with ASD have high rates of anxiety disorders (72-84%), sensory processing difficulties (42-82%), and are at risk for obesity due to lack of physical activity. Yoga has the potential to reduce stress, incorporates sensory concepts and is just as effective as aerobic exercise.

#### **Teaching Strategies**

*Environment:* provide dimmed lighting, soft and calm music and remove distracting objects are removed in preparation of practicing yoga

*Communication:* simple and clear language is utilized in a calm tone and scripting is available in some lessons to aid in systematic instruction

Task analysis: instructions are broken down into manageable steps

Visuals: multiple visuals are provided for each lesson to enhance concept being taught

Choices: throughout lessons students are given opportunities to make choices

*Relaxation elements:* music, breathing, stretching, visualizations, lavender eye pillows, and candles are elements used to promote relaxation

*Routine:* a yoga routine is structured and begins with breathing exercises and a warm up pose and ends with a relaxation pose

*Breaks:* are encouraged during a yoga practice and students are prompted to take one at any time and rejoin when ready

*Colored tape:* colored tape can be utilized to aid in comprehension of where to position body parts during a yoga pose (i.e. tree pose- tape on inside of leg to emphasize placement of foot) Sensory Concepts

Proprioceptive (input on muscles and joints) - weight bearing poses like down dog

Vestibular (movement and balance) - balance poses like tree

Tactile (touch) - bare feet on mat and instructor physical touch to prompt poses

Oral - blowing activities for breathing exercises

Auditory - relaxation music

Smell - lavender eye bags or scented candles

Visual - following instruction's movement into yoga poses

#### **Components of Lesson Plans**

Explain - systematically teaches a concept using visuals and simple and clear language

- *Engage* reinforces the concept taught with activities or group discussions to enhance meaning
- Explore provides hands on activities related to concept taught
- Evaluate prompts instructor to check comprehension of students

*Extend* - sends students home with activity to review concept taught

#### Resources

If you are new to yoga and interested in detailed descriptions of yoga poses or information on setting up the environment, here are two online resources I suggest:

- 1) ABC of Yoga provides detailed step by step instructions of yoga poses and has an animated character doing each pose. <u>http://www.abc-of-yoga.com/</u>
- Yoga Journal provides detailed descriptions of yoga poses, videos and detailed tips (i.e. therapeutic applications, beginner's tips, and modifications). Additionally, it contains information regarding the basics of yoga, philosophy and health. http://www.yogajournal.com/

## Lesson 1: How We Breathe

Objective:	Teach students awareness of how they breathe.
Materials:	Cotton balls
	Straws
	Small object that can rest on each student's stomach (hint: small books, small stuffed animal, or rocks)
Explain:	Review breath handout
Engage:	Touch your nose. Breathe in. Can you feel the air in your nose? Touch your nose. Breathe out. Can you feel the air leaving your nose?
	Put a cotton ball under your nose. Breathe in. Breathe out. When
	did the cotton ball move?
	Touch your mouth. Put a cotton ball in front of your mouth. When did the
	cotton ball move?
	Touch your stomach. Breathe in. Breathe out. Can you feel your stomach
	moving?
	Put object on your stomach. Breathe in. Breathe out. Can you see it move?
Explore:	Air Ball
	Review air ball handout with students. Model to students taking in deep breathes and explain this will help when blowing through the straw to move the cotton ball further. Set a timer for 1 minute.
Evaluation:	What parts of your body do you use to breathe? Students touch body parts and label.
Extend:	Review homework handout.

## Adapted from Bersma & Visscher, 2003



You breathe using your nose, mouth and stomach.



Breathing helps you feel better.

Never breathe using your chest!





Which body part moved? Stomach or Chest? Circle below.

# ???? Lesson 2: Breathing for Relaxation

- **Objective:** Teach students breathing can help them relax and teach ocean breath exercise.
- Materials: Yoga mat
- **Review:** Have each student share results from home activity. What parts of our body do we use to breathe? Touch and label.

We breathe using our stomach not our chest. Touch and label.

- **Explain:** Review relax handout
- **Engage:** Have students share what helps them feel relaxed and make a list. Prompt students share activities that make them feel relaxed not provided on the handout.

#### Explore: <u>Ocean Breath</u>

Sit legs crossed, straight back, hands on lap

Close mouth

Breathe in nose (x5)

Breathe out nose (x5)

Note: model and prompt students to use fingers to count to five slowly

**Evaluation:** Have students independently demonstrate ocean breath to ensure comprehension. Prompt as needed.

What can help us relax?

When can you do breathing exercises?

**Extend:** Review homework handout.



Breathing exercises can help you feel relaxed.





Relaxed makes you feel happy.



Feeling relaxed can help you sit and be quiet.






People can feel relaxed when they walk or watch a movie.



#### What makes you feel relaxed?



#### Circle below:



# Ocean Breath

Sit legs crossed, straight back, and hands on lap

#### Close mouth



# Breathe with nose

In 5 counts and out 5 counts



# Homework

Share with your family what makes you feel relaxed.







Ask family member what makes them feel relaxed.







Write below:

#### Lesson 3: Rabbit Breath

<b>Objective:</b>	Teach definition of relaxed and teach rabbit breath.
Materials:	Yoga mat
<b>Review:</b>	Have each student share results from home activity.
	Name one way breathing helps you.
	Practice ocean breath.
Explain:	These pictures and words mean relax
	Students touch and say each word on handout
Engage:	Circle the pictures that mean relax to you.
	Can you think of other words that mean relax?
Explore:	Rabbit breath
	Sit legs crossed, straight back, and hands on lap
	Close mouth
	Breathe fast in nose (x3 times)
	Breathe slow out mouth (x5 counts)
	Note: model and prompt students to use fingers to count with fingers
Evaluation:	Have students independently demonstrate rabbit breath to ensure comprehension. Prompt as needed.
Extend:	Review homework handout

# Quiet



Resting



Safe



Comfortable



Peaceful



Soft



#### **Rabbit Breath**



Sit legs crossed, straight back, and hands on lap



# Close mouth



#### Breathe fast in nose 3 times



Breathe out mouth slow 5 counts





You have learned two breathing exercises.



Which one do you like?





Ocean Breath or Rabbit Breath





Practice before bedtime.



#### Lesson 4: Lion Breath

**Objective:** Teach student's awareness of how their body feels when relaxed and teach lion's breathe. Materials: Yoga mat Whistles for each student (inexpensive plastic) **Review:** What breathing exercises have you learned? How can breathing help you? Practice ocean breath and nose breath **Explain:** Review relaxed body handout. **Engage:** Demonstrate slow (soft) and fast (loud) breathing with the whistles. Demonstrate heart beat slow and fast by having students jump or run for a few minutes. The have them feel touch their chest to feel their heart beat go from fast to slow. Reinforce slow breathing and heart rate means you are relaxed. **Explore:** Lion's Breath Sit on knees, straight back, and hands on knees Breathe in with nose (x5 counts) Stick out tongue long Breathe out & make "Ha" sound (x5 times) Note: model and prompt students to use fingers to count to five slowly & emphasize long tongue **Evaluation:** Have students independently demonstrate lion breath to ensure comprehension. Prompt as needed. **Extend:** Review homework handout.

# **Relaxed Body**



Your body can feel relaxed.



When you are relaxed your breathing is slow.



When you are relaxed your heart is slow.







Ocean breath and nose breath can help you feel relaxed.







#### **Lion Breath**



Sit on knees, straight back, and hands on lap



#### Breathe in nose five counts



Stick tongue out long

Breathe out make HA sound five times







# Homework



You have learned three breathing exercises.



Which one do you like?





Ocean Breath





Lion Breath



Teach one to a family member.





# Lesson 5: Calming Yoga Poses

Objective:	Teach students yoga poses that can help them feel relaxed. Teach 3 calming yoga poses.
Materials:	Yoga mat
<b>Review:</b>	How does your heart feel when it's relaxed?
	How do you breathe when you are relaxed?
	Name one type of breath you have learned.
	Practice ocean breath and lion breath.
Explain:	Review Yoga handout
Engage:	What is yoga?
	How can yoga help you?
	Reinforce yoga and breathing can help you relax.
Explore:	<u>Rock</u>
	Sit on knees
	Open legs
	Reach arms to forward
	Head down
	Weight on feet not head

#### <u>Sleep</u>

Lay on back

Open legs

Arms out

Palms up

#### **Forward Bend**

Sit back straight

Legs out straight

Reach forward

Bend down

- **Evaluate:** Have students independently demonstrate calming yoga poses to ensure comprehension. Prompt as needed.
- **Extend:** Review homework handout.

Images of yoga poses from ABC-of-Yoga.com



Yoga is a type of exercise.



You will learn yoga poses.





You will stand or sit when you do yoga.



Yoga can help you feel relaxed.



**Relaxing Yoga Poses** 

Forward Bend



#### Rock





# Homework

Which one do you like?





Sleep



Forward Bend



Rock



Practice that yoga pose for 1 minute



# Lesson 6: Stretching Yoga Poses

<b>Objective:</b>	Teach definition of anxious and 3 stretching yoga poses.
Materials:	Yoga mat
<b>Review:</b>	What exercise did you learn?
	Name two things you can do to relax?
	Practice ocean breath while doing rock pose.
Explain:	Review Anxious handout.
Engage:	Have students share what make them feel anxious and make a list. Prompt students to share things that make them anxious that are not on the handout.
Explore:	Down Dog
	Sit on knees
	Reach forward
	Hands on ground
	Lift hips up
	Stand on feet
	Head down
	<u>Cobra</u>
	Lay on stomach
	Hands on ground
	Lift chest

#### **Bridge**

Lay on back

Lift knees up

Feet on ground

Lift stomach up

**Evaluate:** Have students independently demonstrate stretching yoga poses to ensure comprehension. Prompt as needed.

**Extend:** Review homework handout.

Images of yoga poses from ABC-of-Yoga.com

# Anxious



Anxious means worried or scared.







Feeling anxious can make it hard to sit and listen.



Breathing exercises and yoga poses may stop anxious feelings.



People can feel anxious in crowded rooms or new places.









#### What makes you feel anxious?



# Circle below:



crowded rooms



loud noises



school work



new schedule





making new friends dark places



**Stretching Yoga Poses** 

Down Dog



#### Cobra



# Bridge



# Homework



Which one do you like?





#### Down Dog



#### Cobra



#### Bridge



#### Practice that yoga pose for 1 minute



#### Lesson 7: Balancing Yoga Poses

- **Objective:** Define Anxious and teach 3 balancing yoga poses.
- Materials: Yoga mat
- **Review:** Have each student share results from home activity.

Reinforce yoga poses and breathing exercises can help you to relax.

Practice Cobra and Ocean Breath

**Explain:** These pictures and words mean anxious

Students touch and say each word on handout

**Engage:** Circle the pictures that mean anxious to you Can you think of other words that mean anxious?

#### Explore: <u>Tree</u>

Stand up

Stand on one foot

Put foot on inside of leg

Arms out to balance

(balance on other foot)

#### <u>Chair</u>

Stand up

Feet together

Bend knees

Arms up

#### <u>Triangle</u>

Stand up

Feet apart

Bend to side

Grab ankle

Put other arm up

(stretch other side)

**Evaluate:** Have students independently demonstrate stretching yoga poses to ensure comprehension. Prompt as needed.

**Extend:** Review homework handout.

Images of yoga poses from ABC-of-Yoga.com



Worried



Upset



Mad



Uncomfortable



Sad



**Stretching Yoga Poses** 



#### Chair



# Triangle



# Homework

Which one do you like?





Tree





Triangle



Practice that yoga pose for 1 minute



#### **Lesson 8: Coping Strategies for Stress**

<b>Objective:</b>	Teach students to use breathing exercises and yoga poses as a coping
	strategy to stress.
Materials:	Yoga mat
	Whistle for each student (inexpensive plastic)
<b>Review:</b>	Name 1 yoga pose you have learned.
	How can yoga poses help you?
	Practice rock, down dog and tree poses while doing ocean breath
Explain:	Review anxious body handout
Engage:	Demonstrate fast (loud) and slow (soft) breathing with whistles
	Demonstrate heart beat fast by having students jump or run for a few minutes. Then have them touch their chest to feel their heart beat for from fast to slow.
	Reinforce fast breathing and heart rate means you are anxious and slow means you are relaxed.
Explore:	Explain that breathing exercises and yoga poses can be done at any time when students feel anxious. Tell them to ask for a yogi break and choose a favorite breathing exercise or yoga pose.
	Have students practice using the: "I feel I canto relax" sentence strips.
Evaluation:	Have students practice using the sentence strips and independently doing the breathing exercises or poses they choose.
Extend:	Send students home with sentence strips and pictures and tell them to practice before bedtime.

#### Images of yoga poses from ABC-of-Yoga.com

# Anxious Body



Your body can feel anxious.



When you are anxious your breathing is fast.



When you are anxious your heart beat is fast.



Breathing exercises and yoga poses may stop anxious feelings.











Mad



Anxious



Sad



#### Down dog



Cobra











Sleep





Rock



ocean breath



#### rabbit breath



#### lion breath



#### Lesson 9: Yoga Routine

<b>Objective:</b>	Teach students a yoga routine.
Materials:	Lavender eye bags
	Candles
	Soft relaxing music
	Yoga mats
<b>Review:</b>	How can the feelings sentence strip help you?
	Have students practice using the sentence strip.
Explain:	Read yoga practice handout.
Engage:	What will you do during the yoga routine?
	What are the rules during the yoga routine?
Explore:	Model and emphasize ocean breath for each count. To emphasize body awareness during yoga poses include key phrases like, "Can you feel your arms, legs, and head touch the floor?" (i.e. rock pose)
	Yoga Routine
	Rabbit Breath
	Rock (x5)
	Down Dog (x3)
	Cobra (x3)
	Rock (x3)
	Bridge (x3)
	Forward Bend (x4)
	Triangle- stretch each side (x3)

Chair (x3)

Tree- balance on each foot (x3)

Forward Bend (x4)

Rock (x3)

Sleep (1 minute of listening to relaxation music)

- **Evaluation:** Monitor students during the yoga class and prompt as needed to assist students with yoga poses.
- **Extend:** Review homework handout. Emphasize to students the candles they use at home should be scented flameless candles for safety reasons.

Images of yoga poses from ABC-of-Yoga.com



You will learn a yoga routine.



The yoga routine will use breathing exercises and yoga poses.







The yoga routine will have lavender eye bags, candles and music.



The yoga routine may help you feel relaxed.

# **Rules:**



Talk Quietly



Take a break at any time on your mat



Raise your hand for help


# **Supplemental Activity: Guided Imagery**

**Instructions**: Prepare a relaxing environment for the students by lowering the lights and lighting candles. Have students lay on their mats in sleep pose. Tell students they need to close their eyes, not talk, and listen and to try and imagine a place you are going to tell them about. You might want make a signal with students ahead of time to prepare them before placing on eye bags (i.e. light tap on the shoulder).

#### Materials: yoga mat

lavender eye bags

Candles

Ocean sounds

### Visualization: You are on a beach

Laying in the sand

The sand feels warm on your back

The sun is making your face feel warm (put on heated lavender eye bags)

Breathe in slow

Breathe out slow

You hear the sound of the ocean (play ocean sounds)

Waves are crashing in the ocean

Breathe in slow and out slow with the waves

Relax

You are safe

You are happy

Note: Have students lay for 3 minutes

#### Adapted from Radiant Child Yoga

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