EFFECT OF THE EDUCATE 2B YOGA AND MINDFULNESS PROGRAM ON CHILDREN WITH AUTISM SPECTRUM DISORDER IN THE SCHOOL SETTING

Presented BY:

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Allison Morgan MA, OTR, E- RYT – Founder Zensational Kids, LLC
LEARNING OBJECTIVES

1. Define Autism spectrum disorder (ASD) and the educational challenges
2. Explain the benefits of yoga and mindfulness with ASD
3. Describe the Educate2B Program
4. Summarize pilot study findings on the effects of the Educate 2B program on children with ASD
5. Discuss potential future directions for researching the effects of yoga and mindfulness on this population
DISCLOSURE STATEMENT

Allison Morgan MA, OTR, E- RYT-Director of Zensational Kids and author of the Educate 2B program. No relevant financial relationships to disclose.

Jill S Horbacewicz PT MA PhD: No relevant financial or non-financial relationships to disclose
PRESENTATION OVERVIEW

INTRODUCTION

METHODS

RESULTS

DISCUSSION
Autism Spectrum Disorder (ASD) is a general term for a group of complex disorders of brain development.

(DSM-5) (Autism speaks)
INTRODUCTION

BACKGROUND-ASD

STATISTICS: According to the CDC as of 2012, 1 in 68 children were diagnosed with ASD (1 in 42 boys and 1 in 189 girls)
INTRODUCTION
BACKGROUND

YOGA

- Form of exercise that combines various breathing techniques, body postures, meditation and relaxation

MINDFULNESS

- Practice of noticing the present moment without judgement
INTRODUCTION
BACKGROUND-YOGA/MINDFULNESS FOR ASD

RESEARCH FINDINGS:

- Reducing stress (Goldberg, 2004);
- Increasing attending skills and self-regulation 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);
- Increasing imitation skills (Radhakrishna, 2010).
INTRODUCTION
REVIEW OF THE LITERATURE

Effects of yoga on typically developing children in the classroom

- Powel et al, 2008
  The Self Discovery Program
  - 126 children with emotional, behavioral, and learning difficulties
  - 45 minutes of yoga therapy
  - ↑ attention span, listening skills, and relaxation

- Berger et al, 2009
  The Bent on Learning Program
  - 32 children in 4th and 5th grades
  - 1 session per week
  - ↓ aggression and improved well-being

- Bubela et al, 2012
  Yoga with Preschoolers
  - 27 children between three and five years old
  - 20 minute session 1x/wk for 6 weeks
  - ↑ static balance, functional LE strength, flexibility and coordination

Conclusion: Yoga has positive effects on behavior and motor skills
**INTRODUCTION**

**REVIEW OF THE LITERATURE: EFFECTS OF YOGA ON CHILDREN WITH ASD**

<table>
<thead>
<tr>
<th>Buckley-Reen et al, 2013 Get Ready to Learn Program</th>
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<tbody>
<tr>
<td>• 51 children with disabilities, including ASD</td>
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<tr>
<td>• ↑ independence, attention span and self-regulation</td>
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</table>

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<tr>
<th>Radhakrishna et al, 2010 Yoga and preschoolers</th>
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<tr>
<td>• 2010-6 subjects 8-14 yrs</td>
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<tr>
<td>• ↑ communication, behavior and motor control</td>
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**Conclusion:** Yoga has positive effects on behavior and motor control in children with ASD.
INTRODUCTION

PROBLEM STATEMENT

Practical interventions are needed to help children with ASD in the classroom due to ↑ prevalence

Gap in the literature regarding the effects of yoga on behavior and motor skills in children with ASD

Current yoga programs for ASD are not practical for the classroom setting either due to time, space, and/or knowledge of teacher

Studies thus far for ASD have small sample sizes or no control groups, or bias of the raters
INTRODUCTION
BACKGROUND-EDUCATE 2B

30 BREATH, MOVEMENT and MINDFULNESS *scripted* exercises to help students:
Calm, energize, focus, positively connect with compassion and kindness (to themselves and others), strengthen developmental readiness skills for learning
Completed as short **2 minute breaks** throughout the school day (seated or standing – no mats needed)
CENTER (BELLY) BREATH

How it Works
When we breathe into our belly, the lower lobes of our lungs expand. The lower lobes activate our parasympathetic nervous system and engage a “relaxation response.” Our brain receives a message that “all is well, so relax and be calm.” That message then gets sent to the rest of the body. When we are stressed or worried, our breath becomes trapped in the upper lobes of the lungs, only filling the upper clavicular region of the chest. When this occurs, our primitive brain (reptilian brain) turns on. Our reactions become reflexive and habitual. When the body is relaxed, the thinking part of our brain (pre-frontal cortex) is activated, allowing us to create, plan and organize in a rational and reflective way.

States of Being:

- Calm
- Focused
- Connected

Notes:

"As you breathe in, cherish yourself. As you breathe out, cherish all beings." – Dalai Lama XIV

What to do:
- Sit up tall, stand, or lay on your back keeping your spine long and straight.
- Place your hands on your belly. (If you are laying on the floor, you can also place something on your belly such as a stuffed animal, bean bag, small weight, book, etc., just to add a little resistance to help you ‘feel’ the movement of your belly as you breathe.)
- As you breathe in through your nose, the center of your body fills with air. If you are laying on your back, your belly will rise towards the ceiling. If you are seated or standing, your belly moves away from your spine.
- As you exhale through your nose, feel the center of your body pull together. If you are laying down on your back, your belly sinks into the ground. If you are standing or sitting, your belly pulls in towards your spine.

You may wish to add an affirmation to your breath.
As you INHALE, say to yourself, “I am.”
As you EXHALE, say an affirmative word to yourself such as, “scent, safe, happy, confident”

Try counting your inhales for a full minute.
How many times did you inhale? Can you slow it down?

ZensationalKids
To examine the effect of two minute yoga and mindfulness based sessions within the classroom setting on motor performance and social-emotional skills on elementary school children with ASD
PRESENTATION OVERVIEW

INTRODUCTION

METHODS
Subjects
Functional Outcome measures
Procedures
Data Analysis

RESULTS

DISCUSSION
METHODS

SUBJECTS

**Inclusion Criteria**
- Diagnosed with ASD
- Grades 2-6

**Exclusion Criteria**
- Unable to participate in physical activity based on school criteria
- Over age 12
- No parental consent
METHODS

FUNCTIONAL OUTCOME MEASURES: DESSA-MINI

Measures Socio-emotional competence of Children. 8 measures.
METHODS
FUNCTIONAL OUTCOME MEASURES: DESSA-MINI

Excellent internal reliability (range = .924) and is good construct validity.
METHODS
FUNCTIONAL OUTCOME MEASURES: MABC-2

Measures fine and gross motor function in children ages 3-17.

The second age band (ages 7-10) was used in this study.

• Eight items categorized into 3 subsets:
  - Manual Dexterity
  - Catching and Aiming
  - Balance
METHODS
FUNCTIONAL OUTCOME MEASURES: MABC-2

Test-retest Reliability: Interclass Correlation Coefficient of 0.97

The second age band (ages 7-10) was used in this study

In therapeutic practice, the second age band of the MABC-2 has construct validity
METHODS
PROCEDURES

- IRB approval (HSIRB1509)
- Informed consent from:
  - The superintendent of the Bergen County, NJ school system
  - Teachers
  - Parents, along with demographic questionnaire
- Verbal assent from children
- Approval from school attorneys
METHODS

PROCEDURES

• Two classes were assigned to each group

9 students in experimental group

11 in control group

• Teachers of experimental group were Trained in the Educate 2B program by participating in a full day Educate 2B course
METHODS

PROCEDURES

- Teachers were instructed to select from a pool of 15 of the Educate 2B techniques- 5 breath, 5 movement and 5 mindfulness
- Each activity lasted 2 minutes, and was given 3x/day with a 6 minute commitment per day
- Kept a log of which strategies they chose to use each each day
## METHODS PROCEDURES

Worksheet for teachers to document which techniques were utilized with the students receiving the Educate 2B Yoga and mindfulness intervention.

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<thead>
<tr>
<th>TOOL / ACTIVITY</th>
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<th>TH</th>
<th>F</th>
<th>BEHAVIORAL OBSERVATIONS</th>
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<tbody>
<tr>
<td>Center (belly) Breath</td>
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<td>Sun Breath</td>
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<td>Power Breath</td>
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<td>Dragon Breath</td>
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<td>Candle Breath</td>
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<td>Twisters</td>
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<td>I AM swings with affirmations</td>
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<tr>
<td>Balance: Tree or Airplane</td>
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<tr>
<td>Folding Star</td>
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<td>Warrior with affirmations</td>
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<tr>
<td>Melting Butter</td>
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<td>I AM meditation with an affirmation</td>
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<tr>
<td>Healing Heart</td>
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<td>Amazing Me</td>
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<td>Floating Balloon</td>
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METHODS

PROCEDURES

- Participants were assessed twice using the DESSA-mini and MABC-2
  - Pre-test at beginning of school year
  - Post-test 11 weeks later
DESSA-mini graded by participants’ teachers

Teachers blinded to DESSA-mini being part of study

MABC-2 graded by physical therapist

PT was blind to control vs. experimental group
METHODS
DATA ANALYSIS

• Descriptive statistics to describe and analyze demographic data and variables
• SPSS Version 22
• All data was analyzed at the .05 level of significance.
• Mann-Whitney U test: determined differences between groups
• Wilcoxon-signed rank test: determined differences within groups
RESULTS

- 18 M 2 F

Level of Autism

- 3 SEVERE
- 6 MILD
- 11 MODERATE
RESULTS

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>Count</th>
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<tbody>
<tr>
<td>Caucasian</td>
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<tr>
<td>Asian</td>
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<tr>
<td>African American</td>
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<tr>
<td>Other</td>
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</table>
RESULTS

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<th>AGE</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
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<td>3</td>
<td>9</td>
<td>4</td>
<td>2</td>
<td>1</td>
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</table>
No significant difference between the experimental group and control group (p > 0.05)
RESULTS: DESSA-MINI

- Significant difference within the experimental group from pre- to post-test DESSA-mini (p = 0.034)
RESULTS: MABC-2

- Significant difference between groups post-test ($p = .035$)
DISCUSSION
KEY FINDINGS - MOTOR CONTROL

- There was a significant difference between groups when comparing the control and experimental groups in pre test and then in post test.
- The experimental group had no significant difference from pre to post.
- The control group experienced a decrease in score.
DISCUSSION
KEY FINDINGS-SOCIAL-EMOTIONAL COMPETENCE

- There was no significant difference between groups when comparing the control and experimental groups in pre test and then in post test.
- When looking at the scores of the experimental grouped from pre to post, there was a significant difference with an increase in DESSA scores.
RESULTS

Significant difference between control and experimental groups post intervention for the MABC-2 with decrease in control.

Radhakrishna et al, 2010, found a significant increase in gross motor skills.
RESULTS

- Significant improvement within experimental group for the DESSA-mini

Significant increase in the attention, social behavior, and emotional stability of children who received a yoga intervention

Rosenblatt et al, 2011
Radhakrishna et al, 2010
Buckley-Reen et al, 2013
MABC-2 instructions are difficult for children with severe ASD to follow

Sample of convenience

Small sample size

Teachers were not blinded to which group received the intervention

Teachers did not return activity logs

There was no control of the therapies the participants received in and out of school
DISCUSSION
FUTURE STUDIES

Control for level of severity so groups are more equivalent
Larger sample size
MABC-2 best for children able to follow instructions
Children with ASD have cognitive impairments that impede their ability to learn in the classroom.

Existing yoga interventions for children with ASD are not conducive to the classroom setting.

- Educate 2B Yoga and Mindfulness Program is a practical intervention.
- This intervention may improve behavior and motor function to optimize learning.
REFERENCES


Morgan A, Zensational Kids. Educate 2B Yoga and Mindfulness Program.


REFERENCES

- M
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THANK YOU

questions?

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