CRITICALLY APPRAISED PAPER (CAP)

FOCUSED QUESTION
For consumers on the autism spectrum, does supplementing with alternative treatments, when compared to using only traditional treatments and therapies, improve overall quality of treatment and daily life functions?


CLINICAL BOTTOM LINE:
With the increasing prevalence of autism spectrum disorders (ASDs), children’s families and caregivers are trying various treatments to enhance their child’s quality of life. However, it is easy for families to be overwhelmed by the vast amount of alternative and complementary treatments available. Many families currently obtain information by word of mouth (Wong, 2008). While this strategy is useful in sharing ideas it does not provide families with important information such as possible side effects, effectiveness, and research available.

Parents and caregivers of children with an ASD diagnosis completed a 3-hr training program on Qigong Sensory Training (QST). QST consists of 12 movement patterns of patting, shaking, or pressing movements, all in which have effects on the body according to Chinese medicine. Improvements in self-regulation skills were evaluated by parents and teachers who were blind to the study. The control group received intervention after the trials were completed. The results conclude that there was significant improvement for the participants who received the treatment on all measures. Specifically, there was an overall improvement for those who received treatment ($p = 0.019$) as reported by teachers.

Occupational therapists can use this information to provide evidence in support of Qigong massage services for children with ASD if families are seeking alternative treatment approaches.

RESEARCH OBJECTIVE(S)
To evaluate “the effect of a 5-month intervention directed toward improving sensory impairment, digestion, and sleep” using the Qigong Sensory Training (QST) as an intervention strategy (p.432).
DESIGN TYPE AND LEVEL OF EVIDENCE:

Level I: Randomized controlled trial

Limitations (appropriateness of study design):

Was the study design type appropriate for the knowledge level about this topic? Circle yes or no, and if no, explain.

YES/NO

There is some evidence to support massage techniques as an intervention strategy for ASD. This study reviews some of that research in depth.

SAMPLE SELECTION

How were subjects selected to participate? Please describe.

All participants in this study were recruited “by sending an invitation letter to parents of children ages 3 and 6 receiving autism services from two education service districts serving six counties in Oregon” (p. 426).

Inclusion Criteria

- Age < 6 years
- Eligible for early intervention services for ASD

Exclusion Criteria

Those with complicating medical diagnoses or chronic medication regimens were excluded from this study.

SAMPLE CHARACTERISTICS

N = 46

| # Dropouts | 0 |
| # Male     | 37 |
| # Female   | 9 |
| Ethnicity  | NR |
| Disease/disability diagnosis | Autism Spectrum Disorder (ASD) | Pervasive developmental disorder (PDD) | Asperger’s syndrome |

Check appropriate group:

<table>
<thead>
<tr>
<th>&lt;20/study group</th>
<th>20–50/study group</th>
<th>51–100/study group</th>
<th>101–149/study group</th>
<th>150–200/study group</th>
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</thead>
</table>
**INTERVENTION(S) AND CONTROL GROUPS**  
*Add groups if necessary*

**Group 1**

| Brief Description | The treatment group consisted of 25 participants (19 males, 6 females) with a chronological mean age of 65.2 months. This group received treatment of QST that was aimed at manipulating any of the 5 senses and their common functional associations. Trained professionals followed the QST method for exact placement of massage to the designated areas of the body that are believed to affect the 5 senses. For example, the sense of touch is often associated with sleep, whereas impaired vision is associated with anger and irritability (p. 426). |
| Setting | Participants’ current schools and homes. |
| Who Delivered? | Trained professionals and parents. |
| Frequency? | 20 sessions with trained professionals, daily sessions with parents. |
| Duration? | 5 months |

**Group 2**

| Brief Description | Waitlist control group, no intervention provided. |
| Setting | N/A |
| Who Delivered? | N/A |
| Frequency? | N/A |
| Duration? | N/A |

**Intervention Biases:** *Circle yes or no and explain, if needed.*

Contamination  
**YES/NO**

Co-intervention  
**YES/NO** The majority of participants attended an early intervention or pre-K program for 5 to 10 hr per week, which may have affected progress on outcome measures.

Timing  
**YES/NO**

Site  
**YES/NO** Teachers were blind to intervention group.
Use of different therapists to provide intervention

**YES/NO** Per parental report.

**MEASURES AND OUTCOMES**

Complete for each relevant measure when answering the evidence-based question:

Name of measure, what outcome was measured, whether the measure is reliable and valid (as reported in article–yes/no/NR [not reported]), and how frequently the measure was used.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Outcome</th>
<th>Reliability</th>
<th>Validity</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pervasive Development Disorder’s Behavior Inventory (PDDBI)</td>
<td>Whether parents and teachers noticed any change in social and language abilities, maladaptive behaviors, and sensory impairments.</td>
<td>Reliability: This study further states the reliability of this measure is high with internal consistency of “alpha range from .80 to .98 across the various domains and constructs” (p. 426). Test–retest values indicated significant improvement of the group that received the intervention for all evaluated measures with the exception that no test–retest values were obtained for the waitlist group. Parent and teacher reliability was found to be $p &lt; .01$, but the authors did not list where they obtained these reliability and validity findings. Validity: This measure is valid as reported in the article stating that this measure “has gone through extensive development and validation and has been determined by external reviews to demonstrate construct and criterion validity sufficient for use in research” (p. 426). Frequency: Pre-and posttesting.</td>
<td>Validity: This measure is valid as reported in the article stating that this measure “has gone through extensive development and validation and has been determined by external reviews to demonstrate construct and criterion validity sufficient for use in research” (p. 426).</td>
<td>Frequency: Pre-and posttesting.</td>
</tr>
<tr>
<td>Sense and Self-Regulation Checklist (SSC)</td>
<td>Obtain information on changes in sensory impairment, appetite, digestion, and sleep (p. 426). This measure was designed by the researches and has an internal consistency $\alpha$ coefficient of 0.826 and before and after correlation of 0.623 in studies to date.</td>
<td>Reliability: NR. Validity: Internal consistency $\alpha$ coefficient of 0.826. Frequency: Pre- and posttesting.</td>
<td></td>
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</tr>
<tr>
<td>Autism Behavior Checklist (ABC)</td>
<td>Be a specific measure for autism. It was chosen by the authors to be a specific evaluation for “autistic behaviors in the classroom” (p. 426).</td>
<td>Reliability: Adequate according to Eaves and Williams (2006) Validity: Internal consistency $\alpha$ coefficient of .89.</td>
<td>Frequency: Pre- and post testing.</td>
<td></td>
</tr>
</tbody>
</table>
Measurement Biases
Were the evaluators blind to treatment status? Circle yes or no, and if no, explain.

YES/NO

Teachers were blind to the treatment status of participants, but parents were not.

Recall or memory bias. Circle yes or no, and if yes, explain.

YES/NO

RESULTS
List results of outcomes relevant to answering the focused question.

Include statistical significance where appropriate ($p < 0.05$).
Include effect size, if reported.

- Significant improvement for participants who received the treatment on sense-system impairments, abnormal behaviors, and developmental abilities.
- Teachers found significant improvement ($p < 0.05$) between pre- and posttesting for maladaptive behaviors for both the control and treatment group despite no significant treatment effect found when using the PDDBI.
- Teacher data concluded that there was an overall improvement for those who received treatment ($p = 0.019; n^2 = 0.316$) with effect sizes in the moderate category for the treatment group.
- Parent data also indicated improvement for those who received treatment ($p = 0.029; n^2 = 0.412$).
- In the home environment, QST improved social and communication skills and maladaptive behaviors with large effect size.
- Significant improvement on the SSC with behavioral changes ($p < .0001$), behavioral improvement ($p < .005; n^2=0.216$), and new social language learning ($p< .0001$)
- At 5-months follow-up, maintenance of results were evaluated with the following findings: “although all before and after and pre-follow-up mean differences were significantly different from each other, none of the post-follow-up mean differences were significantly different” (p. 430).

Was this study adequately powered (large enough to show a difference)? Circle yes or no, and if no, explain.

YES/NO

Were appropriate analytic methods used? Circle yes or no, and if no, explain.

YES/NO
Were statistics appropriately reported (in written or table format)? Circle yes or no, and if no, explain.

YES/NO

CONCLUSIONS
State the authors’ conclusions that are applicable to answering the evidence-based question.

The implementation of QST intervention yielded positive results in that it “reduces the severity of autism as measured by standardized tests of behavior and developmental abilities” (p. 430). QST can be an effective treatment strategy for children diagnosed with ASD. Occupational therapists can use this information to inform parents and caregivers for consumers with ASD diagnoses as an alternative treatment approach to traditional medical services. In addition, occupational therapists can use this data to justify the effectiveness of this intervention to insurance companies and payers in hopes of funding this alternative treatment approach.

References


This work is based on the evidence-based literature review completed by Hannah Doody, OTS, and Carmela Battaglia, PhD, OTR/L, Faculty Advisor, Keuka College.

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