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The Impact of Somatic Movement on Academic and Behavioral  
Performance in the Fourth-Grade Classroom

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### **Abstract**

The purpose of this study was to explore the impact that somatic movement had on the academic and behavioral performance of elementary students. 21 participants were chosen, with permission, from a designated fourth-grade classroom to participate in the applied treatment—somatic movement. This included stretching, balancing, and low intensity movements. The method of this study was to incorporate somatic movement exercises for approximately five minutes prior to language arts class. The results collected from the study showed that applying the somatic movement exercises in the classroom improved students' engagement, focus, and productivity for an immediate and short amount of time.

### **Research Design**

Current research shows that students benefit from encountering some type of physical activity every day. This can be in the form of physical education classes, after-school sports, individual exercise, or classroom implemented physical activities. The purpose of this study is to investigate the positive impact that somatic movement- which includes stretching, balancing, and low intensity movements- has on academic and behavioral performance in the elementary classroom. Data will be collected by incorporating approximately five minutes of stretching, balancing, and low intensity physical exercise in the classroom prior to language arts class. The data collected will measure the effects that somatic movement has on the learning process of students—specifically on their focus, productivity, and behavior in the classroom. The hypothesis of this study is that activating the brain using somatic movements will positively affect students' academic and behavioral performance.

### **Review of Related Literature**

Research suggests that there is a positive outcome in academic and behavioral performance when physical activity is implemented into the classroom. These benefits include higher productivity (Chandler et al., 2015), better focus (as cited in Sullivan et al., 2017), and improved behavior (Kall et al., 2015). Further studies conclude that the type of physical activity being applied factors into the result outcomes. Stretching, balancing, and cross lateralization—also known as a form somatic movement—provides more immediate results as compared to intense physical activity which provides long lasting results (Erwin et al., 2012).

Evidence can be seen through research that physical activity does have an effect on academic performance. In the study conducted by Chandler et al. (2015), it is evident that incorporating physical movement into a pre-school classroom during Language Arts lessons helps students learn a concept more quickly with a higher retention rate. Also, taking “brain breaks,” which include stretching and brain games, in between subjects increases memory in students (Baker et al., (2017)). More extensive study on academics is seen in the study carried out by Pellicer-Chanoll et al. (2015). 444 secondary students in Barcelona, Spain agreed to be a part of a physical activity study which concluded that students who exercise at least once a week have a much higher chance of improving their academic performance in the course of four years. However, Pellicer-Chanoll et al. (2017), Baker et al. (2017), and Erwin et al. (2012) all state that even though implementing physical activity into the classroom will definitely benefit academic performance, the results will not be seen immediately. If positive results are seen immediately, they are most likely temporary.

With academics aside, incorporating physical activity into the classroom is beneficial for the overall well-being of a student. Being able to prevent or reduce bad behavior in a classroom

is crucial for a positive learning environment. Although behavior was not specifically observed within these studies, it was almost always a variable that was significantly improved, especially in elementary boys (Butzer et al., 2017) (Kall et al., 2015). In another study, Butzer et al. (2017) showed the effects of doing Yoga before class every day for a semester. Students reported through a questionnaire that they felt less stress, slept better, and felt more relaxed. There were mixed opinions about the effects of Yoga on academic performance. The girls strongly agreed that there was a positive impact on their academic performance, whereas most boys said it did not help them academically.

Comparatively, the study of Sullivan et al. (2017) also shows correlations to Butzer et al. (2017) study because the findings of integrating relaxation and stretching exercises reduced the noise levels, stress levels, and increased the focus in the classroom. Kall et al. (2015) suggested that “play and motion,” cross-lateralization games and active movement, seemed to have a much higher positive effect on girls’ academic performance than boys’—as is seen in the findings of Butzer et al. (2017).

From these studies, one can conclude that physical activity does have a beneficial impact on academic and behavioral performance within an elementary classroom. However, studies that incorporated intense physical activity seemed to be less immediate, but have a longer lasting impact on academic performance. It also seemed to benefit both genders. The studies that implemented somatic movement tended to improve the behavior and physical well-being of most students, but the academic performance of exclusively girls.

Table 1

| Author  | Sample   | Milieu  | Intervention   | Outcome Measure  | Response   |
|---|--|---|--|--|--|
| Baker et al. (2017)<br>[1]<br><br>Erwin         | -4 Public schools  | Southeast rural,<br>Missouri                    | -Brain breaks<br>between every two<br>subjects   | -Increased student<br>focus engagement,<br>and memory<br>-Decreased student<br>behavioral problems                                     | Shows a potential<br>for academic<br>achievement if<br>continued   |
| Butzer et al.<br>(2017)<br>[2]                  | -7 <sup>th</sup> grade public<br>school classroom<br>-16 students<br>randomly selected<br>for interviews | N/A   | -Yoga before class<br>every day for a<br>semester  | -Benefits stress, sleep,<br>and relaxation<br>-Mixed results on the<br>benefits of academic<br>performance<br>(particularly for girls) | -Positive benefits on<br>physical well-being/<br>behavior<br>-Mixed: girls had<br>academic<br>achievement  |
| Chandler et al.<br>(2015)<br>[3]                | -Pre-school students<br>-4 randomized<br>control groups  | Australia                                       | -physical movement<br>and gestures<br>implemented when<br>learning a new<br>Language-Italian.<br>-4 weeks              | -Language was<br>learned more quickly<br>with a significantly<br>higher retention rate   | -Physical movement<br>and gestures<br>improved the overall<br>speed and memory<br>of a student learning<br>Italian                                 |
| Erwin et al.<br>(2012)<br>[4]                   | -29 third grade<br>students<br>-2 different<br>classrooms  | South Eastern<br>Elementary School,<br>Virginia | -Short bouts of<br>physical activity<br>(PA) in between<br>classes<br>-20-week period                                  | -Curriculum-based<br>measurements (CBM)<br>increased significantly<br>at the end of 20 weeks   | -CBM were slow to<br>change, but PA was<br>beneficial over a<br>significant period of<br>time  |
| Kall et al.<br>(2015)<br>[5]                    | -545 students<br>-122 in intervention<br>schools<br>-423 in control<br>schools                           | Sweden  | -2 extra 30-45<br>minute classes a<br>week of "play and<br>motion"   | -Improved<br>psychological health<br>and academic<br>achievement<br>(particularly in girls)  | -Students' national<br>test scores improved<br>the most in<br>mathematics<br>-Boys had better<br>behavior<br>-girls has less<br>emotional problems |
| Pellicer-Chenoll et<br>al.<br>(2015)<br>[6]     | -444 secondary<br>students completed<br>4-year study   | Barcelona City<br>High School, Spain            | -aerobics and<br>strength training<br>implemented every<br>week  | -25% of students<br>moved from "low<br>performance" to "high<br>performance" in<br>academic achievement<br>-No negative<br>movement    | -Exercise was most<br>likely the factor that<br>improved the<br>students' academic<br>performance  |
| As cited in Sullivan<br>et al.<br>(2017)<br>[7] | -88 students in<br>primary and<br>secondary School   | -Sweden   | -Stretching and<br>relaxation exercises<br>-5-10 minutes daily<br>over 4 weeks to<br>improve noise level<br>and stress | Questionnaires<br>Reported: 41.2% quite<br>good, 32.4% good,<br>20.6% very good, and<br>5.9% bad.                                      | -Overall,<br>implementing<br>relaxation exercises<br>and stretching<br>improves the noise<br>level, stress, and<br>focus in the<br>classroom       |

## **Methodology**

### **Participants**

The participants applicable for this study were collected from an already chosen fourth-grade classroom through a convenience sampling. There were 22 possible participants and 21, (10 girls and 11 boys), agreed to be in the study by signing an ascent form and having their parents sign a consent form that allowed the researchers to observe, apply treatment, and collect and interpret data from the observations. The participants came from a variety of different backgrounds, nationalities, and had diverse academic challenges and achievements.

### **Data Gathering**

To gather information based on students' focus, productivity, and behavior, two days were taken to specifically observe the participants' academic and behavioral performance prior to treatment. Detailed notes were taken on both days that were concentrated on the focus, productivity, and behavior of the students as well as any odd or interesting behaviors exhibited. This information was used as the baseline data. A coding system was used in which every student was assigned a letter from A-U to preserve confidentiality and identity.

To gather the data of the applied treatment to the same group of participants, the identical qualitative measures were taken by creating detailed notes on the focus, productivity, and behavior of the students- including additional behavior that stood out during and after the treatment.

### **Materials**

The materials of this study consisted of pre-planned somatic movement exercises that were the designated treatment implemented right before language arts class. The specific exercises included: one stretch, one balancing position, and one active movement (refer to table 2). The

researchers modeled the somatic movements and the students copied their behavior. There was also music playing in the background during the performed exercises. The treatment took approximately five minutes to complete.

Table 2

| <b>Treatment Days</b> | <b>Stretch</b>        | <b>Balancing position</b>                          | <b>Active movement</b> | <b>Variables</b>                            |
|-----------------------|-----------------------|--|------------------------|---|
| Treatment Day 1       | Triangle pose         | Tree balance<br>(One leg resting on opposite knee) | Jumping jacks          | -6 observers<br>-desks arranged differently |
| Treatment Day 2       | Downward dog          | One leg stretch lift                               | Squat jacks            | -2 observers<br>-Class in library           |
| Treatment Day 3       | Backbend or table top | Lunge balance                                      | Squat jacks            | -7 observers<br>-Desks arranged differently |
| Treatment Day 4       | Roll Stretch          | Jump holds   | High knees (slow)      | -4 observers<br>-crazy hair day             |

### **Data Analysis**

The data collected during the observations before the treatment showed that students were relatively well-behaved, with a few disturbances of talking, passing notes, and playing with items inside the desks. The focus level was average. Many students were fidgeting, slouching in their desks, looking around, and only a handful of students raised their hands to answer questions asked by the teacher. The productivity level was moderate. Some students were confused and spent a lot of time asking questions and seeking help. Other students were on task the entire time, finishing the assignment quickly.

The data collected after the treatment exhibited similar aspects in terms of behavior. The somatic movement exercises had a tendency to wind the students up, resulting in some talking and fidgeting. However, the conversations were mostly focused on the learning. The focus in the classroom changed significantly in the terms of engagement and participation. As opposed to the

observations before the treatment, the students were engaged, asking and answering questions, sitting up in their chairs, and smiling and laughing. Also, the productivity increased after the somatic movement was applied. The students began their assignments more quickly and stayed focused for longer. When they worked in cooperative groups, they interacted well and finished what they needed to with time to spare.

Some additional benefits were seen aside from the behavior, productivity, and focus being observed. Student E caught the researchers' attention because he would always stand and sway a little while doing his assignments. This happened for three observation days in a row. On the second day of treatment and onward, he never stood up once when working on the assignment except to ask a question. Also, student C was a very active individual on observation day one—standing up, pacing, and talking to anyone who would listen. On the last day of treatment, he was still very talkative, but it was amazing how well he sat still. The effects of the somatic movement treatment were most likely why Student E and C were comfortable sitting still in class.

### **Reporting Results**

#### **Conclusions**

The results of this study showed that implementing somatic movement before language arts class seemed to benefit the students' learning. Even though behavioral achievement was insignificant, the focus and productivity of the students increased significantly after the treatment, ultimately resulting in academic achievement. Directly after participating in the somatic movement exercises, the students were very active and restless. However, when the teacher started the introduction to the lesson, their restlessness turned into engagement and participation. The students seemed to ask and answer a lot more questions while focusing on the

instructions for the assignment. When it was time for independent work, the students started on their assignment right away, as opposed to before, working quietly and quickly. When the students were finished with their assignments, the effects of the somatic movement were significantly less prevalent. Therefore, the effects of the somatic treatment were immediate, but not long lasting.

### **Limitations**

The limitations of this study were found in the lurking variables, resources, and the time allotted for the observations and applied treatment. The lurking variables, as seen in table 2, were the six observers at the back of the room, the additional research study on the arrangements of desks taking place, the change of location, and the awarded crazy hair day. There was also a lack of resources to find somatic movement exercises. Therefore, a few additional low intensity exercises were incorporated.

The greatest limitation of this study was the amount of time we spent in the classroom observing and applying the treatment. With only two days of observation and four days of treatment, there were some evident benefits and some mixed results. If the study could have been carried out longer and more frequently, then the mixed results might have been clarified. All of these factors most likely altered the results drawn from the data to a certain extent.

### **Literature Review Correlation**

The results of this research study somewhat agreed with the previous research conducted on the topic of the benefits of movement in the classroom. As in previous studies, there is an evident benefit seen from implementing physical activity into the elementary classroom. Also, the benefits of incorporated low-intensity movements are more immediate, but not long lasting. However, as in other studies, there was no difference seen between the effects that somatic

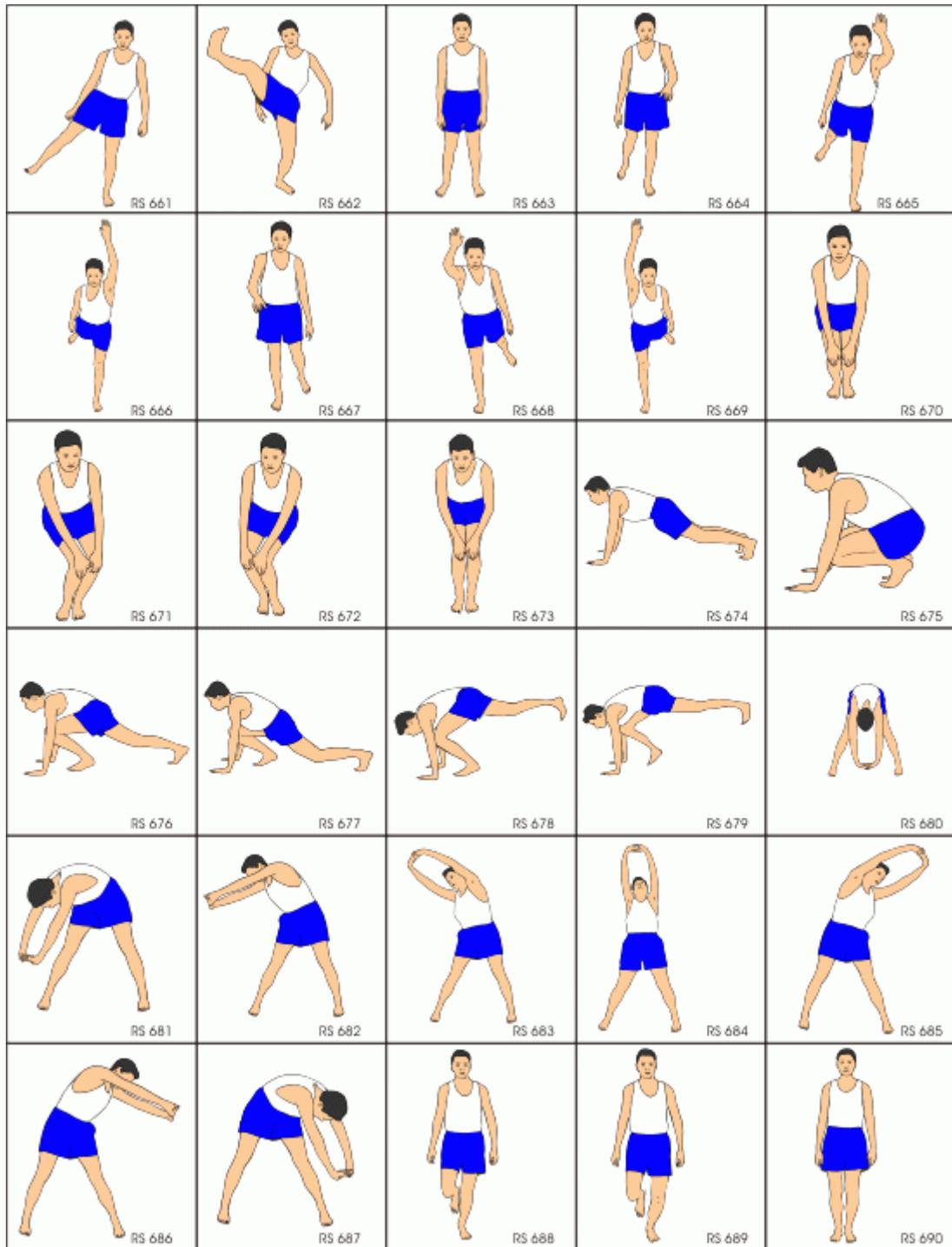
movement had on girls versus boys. Both genders seemed to benefit equally from the treatment applied. Also, the somatic movement administered seemed to have little impact on the well-being of the students, but a positive influence on their academic performance.

### **Action in the classroom**

Implementing somatic movement in the elementary classroom is beneficial because of the immediate positive results of focus, engagement, and productivity. Recommendations for executing somatic movement in the classroom would be to make the activity time short—less than eight minutes. The students in the study seemed to really enjoy the somatic movements, but grew restless and tired when prolonged more than eight minutes. Also, have the students engage in the exercise in close proximity to their desks. This will keep them calmer and less distracted by their friends. If there is time, it is recommended that you calm the students down for a few minutes by reading, journaling, or listening to a story. For somatic movement to be fully effective, it is suggested that the exercises be applied at least two times a day in between subjects consistently and for an extended period of time to see positive results.

## **Appendix**

### Somatic Movement Exercises





Peaceful warrior



Seated forward bend



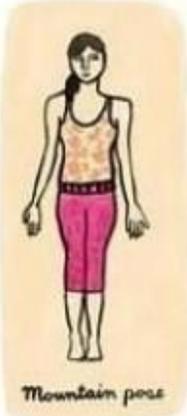
Boat pose



Downward dog



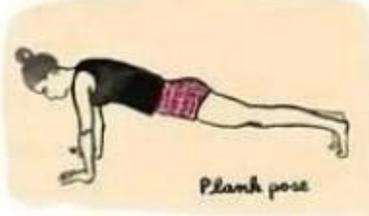
Warrior 1



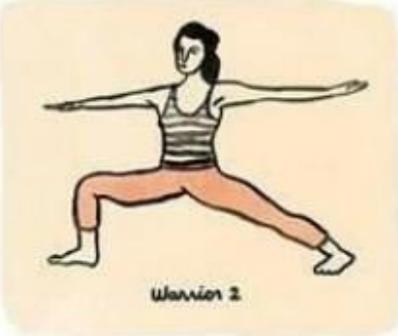
Mountain pose



Head stand



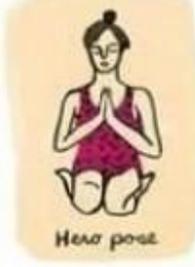
Plank pose



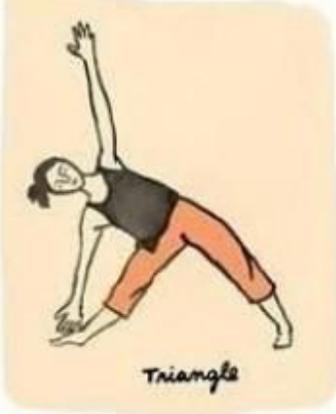
Warrior 2



Tree pose



Hero pose



Triangle



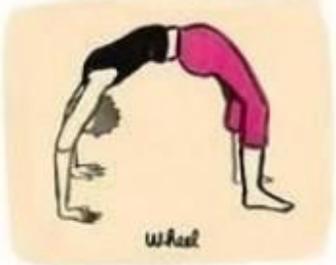
Crow pose



Side bend



Shoulder stand



Wheel

Dear 4<sup>th</sup> grade students,

We are doing a research study to see how physical activity can positively affect the way you learn in the classroom. A research study is a way to learn more about people. We would like to introduce you to some activities before class begins and then observe you while Mrs. Collson teaches a lesson. We are asking for you to participate in this research—If you decide that you want to be part of this study, you will be asked to cooperate in the activities we demonstrate.

Other research has shown that physical activity can help your learning process, so we want to see if it can help you in the classroom!

If you do not want to be in our research study, no one will be angry with you and there will be no penalty. It will not affect your grade in any way. Your participation is voluntary, which also means that you can change your mind and stop participating at any time. If you decide to stop after we begin, that's okay too. Your parents know about the study as well. When we are finished with this research we will write a report about what was learned. This report will not include your name or that you were in the study.

If you decide you want to be in this study, please sign your name.

I, \_\_\_\_\_, want to be in this research study.

\_\_\_\_\_  
(Sign your name here)

\_\_\_\_\_  
(Date)

Dear 4<sup>th</sup> grade families,

Our names are Brooklynn Springs and Sara Collson. We are senior education majors at Southern Adventist University.

We are conducting a research study to examine the impact of somatic movements on the academic and behavioral performance of students in the classroom. Specifically, we are interested to see if different types of physical activity positively affect students in their learning process. We plan to observe the students prior to implementing any activity to see how they operate on a regular basis, then aim to engage them in activities on a following day. We are also wanting to collect some limited data from your child's performance and are asking for your child's participation in this research.

Your child's participation will involve cooperating in the brief activities we introduce before Mrs. Collson begins her routine lesson plans. Throughout the following class time, we will be observing the way each student functions academically and behaviorally compared to before. These activities taking place will not last longer than 5 to 10 minutes.

If you or your child chooses not to participate, there will be no penalty. It will not affect your child's grade, treatment, services rendered, and so forth, to which you or your child may otherwise be entitled. Your child's participation is voluntary and he/she is free to withdraw from participation at any time without suffering any ramifications. The results of our research study may be published, but your child's name will not be used—data collected will be kept confidential.

If you have any questions concerning this study or your child's participation in this study, please feel free to contact us at [brooklynnbell@southern.edu](mailto:brooklynnbell@southern.edu) or [scollson@southern.edu](mailto:scollson@southern.edu).

Sincerely,  
Brooklynn Springs and Sara Collson

By signing below, I give consent for my child to participate in the above-referenced study.

Child's Name: \_\_\_\_\_

Parent's Name: \_\_\_\_\_

Parent's Signature: \_\_\_\_\_

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