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Does a combination of diaphragmatic breathing exercises and yoga techniques help children with asthma better manage their symptoms?

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Background: Diaphragmatic breathing is a technique in which the diaphragm is used to expand and fill the lungs. It is a more efficient and energy conserving means of breathing than using the chest and accessory muscles. Studies have supported diaphragmatic breathing in improving the quality of life and symptoms in asthmatics.Yoga is a Hindu art that looks at mind and body control. Yoga slows breathing and improves posture. Studies have shown that yoga increases the effects of medication, improves lung function, and decreases asthma attacks in asthmatics.

Purpose: The purpose of this study was to determine if the combination of diaphragmatic breathing with yoga poses in combination with traditional medical management of asthma increased the overall control of the asthma symptoms in children.

Subject: Children between the ages of 7 and 14 with a medical diagnosis of asthma who were receiving traditional asthma management were included in this study. 8 subjects began the study with 6 subjects completing the study.

Method: The study was 8 weeks long in duration with 3 separate visits, the initial visit, a 4 week follow up, and an 8 week follow up visit.Subjects' guardians were given an informed consent, the Asthma Control Test (ACT), Functional Status Questionnaire (FSQ), and an asthma survey on the first visit and again at the 4 and 8 week follow up visits. Yoga poses and diaphragmatic breathing techniques were taught to the subjects on the first visit, and followed up with questions or concerns on the second and third visits.Chest measurements were taken at each visit to track the progress of chest restrictions. Chest measurements included chest circumference, lateral side bending of the spine, lateral expansion of the ribs, rib springing, and breathing patterns. Blood pressure, pulse, respiratory rate, height, and weight were also recorded with each visit. Calendars were given to the subjects to track how many days the yoga was performed at home.

Result: At the end of visit 3, all participants were seen to have normal rib springing. All but two participants were seen to have a breathing pattern of 90% diaphragm and 10% chest. Of the two that did not have this breathing pattern, 80% diaphragm and 20% chest was observed. Lateral side bending and chest circumference were not consistent among participants. Lateral expansion of the ribs was seen to be normal on both the right and left for all participants by visit 3. The correlation value for BMI to ACT score is (-0.376), indicating that there is a weak negative relationship between BMI and ACT scores. There is however a trend towards what was expected, that as BMI increases, ACT scores tend to decrease. The P-value for calendar days to average ACT score is (p=0.033). This P-value indicates that there is strong evidence to infer that someone with a higher number of days performing the yoga and diaphragmatic breathing will have a higher average ACT score.

Conclusion: Due to the limited number of participants, it was difficult to have many statistically significant results. With this said, trends were still observed and participants gave subjective reports as to how they thought the yoga and diaphragmatic breathing made them feel. More research is needed looking at chest restrictions in this population, and a larger sample size is needed to see any type of significance between BMI and ACT scores. As a whole, this study suggests that benefits can be seen in children who perform yoga and diaphragmatic breathing as an adjunct to managing asthma symptoms.

Biography

William Hanlon, Doctor of Physical Therapy graduated with Honors from University of Pennsylvania, Philadelphia, Pennsylvania in 1980 with a Bachelors Degree in Physical Therapy.While continuing to work full time clinically, he completed an advanced Masters in Physical Therapy in 1989 and a Doctorate in Physical Therapy in 2010 at Temple University in Philadelphia. He has been teaching full time in the Physical Therapy Program at Saint Francis University since 1997 while he continues to practice part time clinically.His areas of teaching include Cardiopulmonary Physical Therapy, Cardiopulmonary Pathology as well as musculoskeletal courses.His research interest in physical therapy treatment of asthma is ongoing for the last several years.He runs an educational sports camp for children with asthma for the last seven years; which has included pulmonary function testing of kids with asthma, running endurance testing, education on breathing exercises for asthma and physical activity participation in this population.

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